

# COMMERCIAL CAR JOURNAL

THE MAGAZINE FOR FLEET OPERATORS

SEPTEMBER 1945



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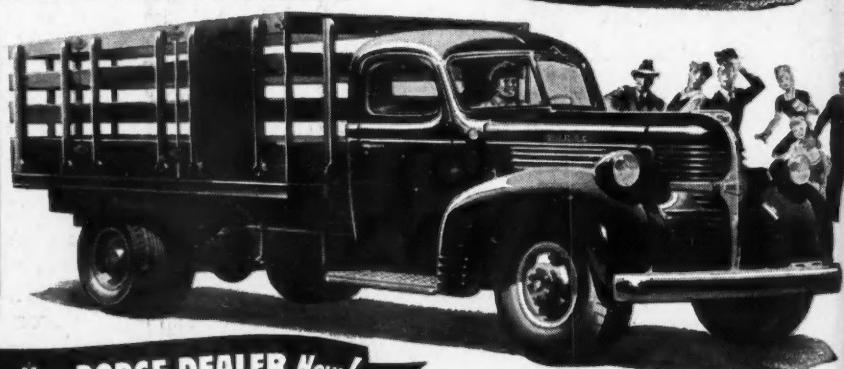
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# COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

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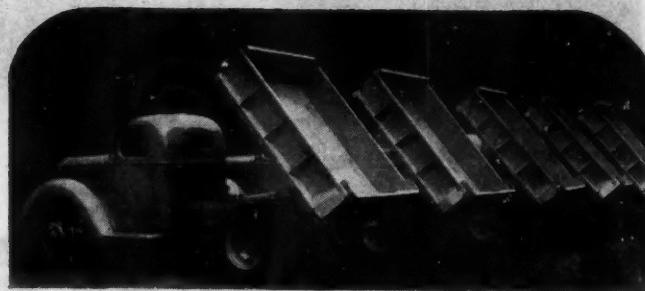


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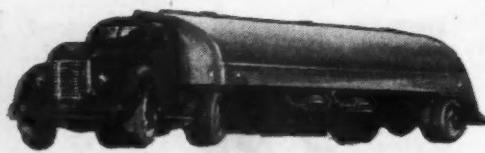
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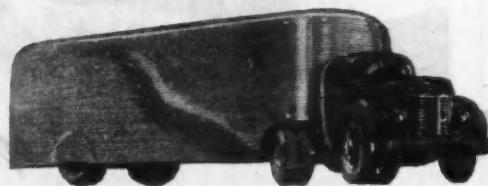
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YEARBOOK OF BUSINESS MAPS

**INTERNATIONAL Trucks**

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**NEW TRUCKS:** The government has authorized the manufacture of a limited quantity of light, medium and heavy-duty International Trucks for essential civilian hauling.

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*Buy More War Bonds and Keep Them*





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# COMMERCIAL CAR JOURNAL

VOL. LXX, No. 1, PHILADELPHIA, SEPTEMBER, 1945

## WASHINGTON RUNAROUND



### ROUND-UP OF OFFICIAL ODT, WPB AND OPA RECONVERSION NEWS

#### Truck and Trailer

#### Rationing Ends Dec. 1

TRUCKS and trailers will not be rationed after Dec. 1, 1945.

However, in order to effect an orderly termination of rationing of new commercial motor vehicles, Guy A. Richardson, director of the ODT Highway Transport Department announces the following changes in rationing procedure:

1. Effective Sept. 22, 1945, persons desiring to obtain a new commercial motor vehicle will no longer be required to file an application with this office. They should simply place a firm order for the desired vehicle with the dealer of their choice, provided that dealer will accept such order.

2. Effective Oct. 1, 1945, this office will no longer issue certificates of transfer covering new commercial motor vehicles. During the period Sept. 22 to Sept. 30, 1945, inclusive, this office will issue certificates of transfer on all approvable applications submitted prior to Sept. 22, 1945.

3. Holders of certificates of transfer are urged to place firm orders for the units covered by such certificates with the dealers of their choice before Nov. 1, 1945. During the calendar month of October, 1945, dealers are prohibited from transferring vehicles except to holders of valid certificates of transfer.

4. During the calendar month of November, 1945, dealers are re-

★ ★ ★

#### NEWS IN BRIEF

All ODT highway transport orders will be ineffective by NOV. 1.

Truck rationing will end Dec. 1.

By the end of the year it is expected that all ODT district and regional offices will be out of business.

ODT maintenance advisory committees have been informed by letter that their services will not be required after Nov. 1.

Chances are good that all tire rationing will end by Jan. 1.

War Production Board orders limiting the production of automotive vehicles, parts, maintenance equipment, batteries, etc., were terminated Aug. 22.

Surplus trucks and parts in staggering quantities are pouring into the Office of Surplus Property, Department of Commerce.

Surplus parts have been moving so slowly in "spot" sales that from now on fleets will be allowed to buy direct instead of going through dealers and jobbers. It is estimated that there are now \$300,000,000 worth of spare parts in surplus stocks.

War Manpower Commission orders, including the 48-hour minimum week, job referrals, list of essential activities, transfer of workers at increased rates of pay, etc. were revoked during the month of August.

quired to give preference in the delivery of new commercial motor vehicles to holders of valid certificates of transfer who, on or before Oct. 31, 1945, shall have delivered or surrendered such certificate to them with a firm purchase order. Dealers may, however, during the calendar month of November 1, 1945, deliver vehicles on which they have not made commitments to any holder of a valid certificate of transfer who shall have placed a firm order prior to Nov. 1, 1945, to any person not the holder of a certificate of transfer.

5. All certificates of transfer which according to their terms will not expire until a date subsequent to Nov. 30, 1945, shall cease to be of any force or effect on and after Dec. 1, 1945, notwithstanding any date specified in such certificate to the contrary. Thereafter, the matter of purchase and delivery of new commercial motor vehicles shall be one between buyer and seller, except as regulated by agencies of government other than the Office of Defense Transportation.

#### Gasoline Price Ceiling Reductions Set for East

Previously announced general price ceiling reductions on gasoline in eastern seaboard areas went into effect Sept. 17 at retail establishments, OPA announced.

Reduction in retail gasoline ceilings will be 1.2 cents a gallon throughout the 17 states and the Dis-

(TURN TO NEXT PAGE, PLEASE)

# WASHINGTON R

trict of Columbia with the following exceptions: in Florida east of the Apalachicola River, Georgia, most of West Virginia, eastern Pennsylvania and the Buffalo, N. Y., area, the reduction will be six-tenths of a cent a gallon. The 17 states affected, in addition to the District of Columbia, are Conn., Del., that part of Florida west of the Apalachicola River, Ga., Mass., Md., N. H., N. J., N. Y., N. C., Pa., R. I., S. C., Vt., Va. and W. Va.

Reduction in refinery and wholesale (including tank wagons) ceiling prices on these products went into effect Sept. 1.

## All Trucks Eligible for Tires

OPA has made all truck operators eligible for new truck tires. The operator of any type of commercial vehicle may now apply for a new tire and upon a showing of need will receive due consideration. However, vehicles in the expanded WPB Eligibility List will enjoy priority.

## Parts Prices Still Controlled

Suspension of price control on most automotive parts sold to passenger automobile manufacturers for use as passenger automobile original equipment became effective Aug. 31, 1945.

OPA emphasized that price control is being continued on all automotive parts sold for replacement purposes.

## Fleets Free to Build

Construction of truck terminals, freight loading and unloading facilities without authorization is now permitted by amendment of WPB Order L-41 on Sept. 7, 1945.

## 300 New Trucks Unrationed

New commercial trucks manufactured prior to Jan. 1, 1943, have been released from rationing controls by ODT. It is estimated that only about 300 such vehicles are in the national stockpile.

## Credit Cards Again Permitted

The prohibition against the use of credit cards at retail gasoline outlets has been removed, effective Sept. 15.

## Road Building Unlimited

Highway construction is now permitted without limitation as the result of WPB's revocation of order L-41-E.

## LIST OF ODT ORDERS REVOKED

Following is the list of ODT orders applying to highway transport which have been revoked or scheduled for revocation, together with the effective date of revocation:

### GENERAL ORDERS

#### 3, REVISED

Prohibits wasteful operation, duplication of parallel services, and circuitous operation and requires capacity loading of trucks and leasing or renting of motor trucks where necessary and permits filing of Joint Action Plans.—Nov. 1, 1945

#### 3, REVISED, SECTION 501.6 (D)

Prohibits extension of present operations or inauguration of new operations by common carriers without prior ODT authority.—Aug. 16, 1945

#### 6A

Applies to motor carriers operating in local carriage service and collection and delivery service as defined in the order, prohibits wasteful operation, requires full loading, restricts collection and delivery service, and permits the filing of Joint Action Plans.—Nov. 1, 1945

#### 6A, SECTION 501.23 (C)

Prohibits extension of present operations or inauguration of new operations by local carriers without prior ODT authority.—Aug. 16, 1945

#### 17

Applies to private and contract carriers. Prohibits wasteful operation, duplication of parallel services, requires leasing or renting of motor trucks where necessary, reduction of mileage by not less than 25%, prohibits special deliveries, call backs and specifies number of deliveries, requires capacity loading, permits the filing of Joint Action Plans.—Nov. 1, 1945

#### 17, SECTION 501.67

Mileage reduction provisions.—Aug. 16, 1945

#### 17, SECTIONS 501.69 (D), 501.69 (E)

Prohibits extension of present operations or inauguration of new operations without prior ODT authority.—Aug. 16, 1945

#### 17, GENERAL PERMITS AND SUPPLEMENTARY ORDERS

Joint Action Plans.—Nov. 1, 1945

#### 21A

Requires the issuance of Certificates of War Necessity for the operation of commercial motor vehicles and limits the mileage to be operated and motor fuel to be consumed.—Aug. 16, 1945

#### 23

Prohibits the operation of any motor vehicle at a rate of speed in excess of 35 miles per hour or applicable speed limit prescribed by public authorities, whichever speed is the lesser.—Aug. 19, 1945

#### 28

Restricts the speed of motor vehicles in Puerto Rico.—Aug. 23, 1945

#### 30

Applies to common carriers of property in Puerto Rico.—Aug. 23, 1945

#### 31

Applies to motor carriers of property in Puerto Rico and supersedes ODT General Order 17.—Aug. 23, 1945

#### 32

Local Delivery Carriers in Puerto Rico and supersedes ODT General Order 6.—Aug. 23, 1945

#### 34

Provides for the issuance of Certificates of War Necessity for commercial motor vehicles in Puerto Rico.—Aug. 23, 1945

#### 37

Provides for less-than-truckloads deliveries of petroleum by tank trucks. Specifies a minimum number of gallons that may be delivered. Prohibits certain practices and call backs except as provided in order.—Aug. 19, 1945

#### 43

Applies to common carriers of household goods. Prohibits wasteful operations and over-the-road service if not loaded to 80% of capacity without registering with District Office. Prohibits extension of present operations or inauguration of new operations without prior approval.—Nov. 1, 1945

#### 44A

Provides for the allocation and transfer of new commercial motor vehicles within the United States and its territories and possessions and the issuance of Certificates of Transfer.—Dec. 1, 1945

of the 10-ply categories, 7.00 and 7.50-20. However, the eligible demand for most size truck tires is not expected to exceed greatly the number available.

Furthermore, revisions have been announced in the "Essentiality List of Truck and Bus Motor Vehicle Services," issued by the War Production Board and Department of Agriculture and used by OPA boards as a guide in the issuance of truck tire certificates. The principal effect of the current changes in the listing is to upgrade the tire ratings for the construction and allied industries and down-grade the ratings for wartime activities and military supplies.

The revised Essentiality List upgrades the tire preference ratings on lumber; building materials and clay products; structural metal, glass and stone; construction services; quarry

# RUNAROUND

## AND SCHEDULED FOR REVOCATION

48

Restricts transfer, conversion, diversion or change of service of fluid food motor tank vehicles on and after January 17, 1945.—Aug. 17, 1945

49

Restricts within Puerto Rico the conversion of motor trucks to any other type of conveyance or otherwise alter the character of the motor vehicle without approval of ODT.—Aug. 28, 1945

50

Accords preference to veterans of World War II in issuance of Certificates of War Necessity.—Aug. 17, 1945

54

Restricts the transportation of race horses and show animals by common or contract carriers.—Aug. 17, 1945

## ADMINISTRATIVE ORDERS

4

Delegates authority to Regional Directors and District Managers of Highway Transport Department to requisition and dispose used trucks.—Aug. 18, 1945

5

Provides the procedure for suspension, recall, cancellation or revocation of Certificates of War Necessity.—Aug. 18, 1945

8

Provides for the procedure governing the review and reconsideration of the terms and conditions set forth in Certificates of War Necessity.—Aug. 18, 1945

9

Prescribes the records to be kept and reports to be filed by holders of Certificates of War Necessity.—Aug. 18, 1945

10

Requires common carriers to register with District Office empty or partially loaded trucks and freight which cannot be moved within a limited time.—Nov. 1, 1945

14

Prescribes procedure to be followed in applying

products; grain; civilian apparel; textiles for civilian use; and solid fuels and fuel oil (retail service during the fall and winter months); while lower ratings have been provided for aircraft; ordnance; munitions; chemicals for the military; military apparel; textiles for the armed forces; and the pick up of scrap and waste materials.

## Used Truck Tires Unrationed

All used truck tires and truck tires requiring major repairs to be serviceable were removed from OPA rationing control on Aug. 15. Rationing of farm-implement and industrial type tires ended Aug. 20.

## Convention Ban Off Oct. 1

The ODT ban on conventions, group meetings and trade shows will be removed Oct. 1, 1945.

SEPTEMBER, 1945

## SPECIAL ORDERS

for special permit for relief from compliance with the provisions of an order of the Office of Defense Transportation, relating to property-carrying motor vehicles.—Nov. 1, 1945

15

Prescribes the method of applying for approval of extension or inauguration of transportation service by motor carriers of property.—Aug. 16, 1945

27A

Establishes the procedure for handling applications for Certificates of Transfer issued under the provisions of General Order ODT 44A.—Oct. 1, 1945

## SPECIAL ORDERS

### E SERIES

These orders provide for expediting collection and delivery of line haul shipments at specific points named therein.—Nov. 1, 1945

### MF-1

Provides for substitution of motor carrier service for rail service.—Oct. 1, 1945

## GENERAL L ORDERS

3

Restricts the transportation of live poultry by commercial motor vehicles from or within certain designated areas in the States of Delaware, Maryland, Virginia, and West Virginia.—Aug. 27, 1945

4

Restricts transportation of Irish Potatoes from certain designated areas in the States of Idaho, Oregon, and California by motor carrier.—Aug. 27, 1945

6

Restricts the transportation by commercial motor vehicle of live chickens within or from the States of Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Texas, and Wisconsin.—Aug. 27, 1945

## ODT Closes Regional Office in Philadelphia

The Philadelphia Regional Office of the Highway Transport Department of the Office of Defense Transportation was closed on Aug. 31 and its operations combined with that of ODT's New York Regional Office. Melvin R. Greene, regional director of the Philadelphia office, has become new regional director of the enlarged New York region. A. S. McEvoy, who headed the New York office, left ODT to return to private industry on Sept. 1.

## Liquid Transport Dept. Out

The Liquid Transport Department of the ODT has been discontinued effective Sept. 20. The action applies to all shippers of liquid products in highway tank trucks.

## Truck Tires May Be First to Go Unrationed

Rationing of tires should remain only so long as the difference between supply and demand makes orderly distribution without rationing impossible, the Rubber Industry Advisory Committee was told by War Production Board officials and an Office of Price Administration spokesman at a recent meeting.

Truck tires probably will be removed from rationing before passenger car tires and new cars will be supplied with only four tires so long as tires still are needed for rolling wheels now on the road, the discussion indicated.

Rumors that have been sweeping the country that rationing of certain categories of tires will be lifted immediately are unfounded, WPB said. Tires designated as "factory seconds," military surplus tires, and all other passenger and truck tires now being rationed will continue to be rationed.

A program was outlined for improving the quality of certain products when increased supplies of natural rubber become available. One of the first major items in which more natural rubber will be used is truck tires, it was said.

The committee was given tentative tire and tube production schedules through 1946. They call for 66,000,000 passenger automobile and motorcycle tires in 1946, an all-time high. The previous peak output was 53,000,000 in 1941. Planned truck and bus tire production is 4,480,000 in the fourth quarter of this year and 15,380,000 next year.

## End of 100-Octane Program Boon to Civilian Users

With adequate stockpiles on hand to cover military requirements for several months, the Petroleum Administration for War has recommended the termination of all military contracts for 100-octane gasoline, with a provision for a tapering-off period not to exceed 30 days. The termination of the 100-octane gasoline program will make available adequate supplies for refiners to return to prewar schedules for making various grades of civilian gasoline. All refiners now have adequate supplies for prewar gasoline for civilian use.

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## District ODT Offices to Close by Nov. 1

All district offices of the Highway Transport Department will be closed on or before Nov. 1, according to the ODT. Thirty-seven offices were to be closed on or before Sept. 22, three were scheduled to close Oct. 15, and the remaining 53 were listed to close on Nov. 1.

The list of 40 district offices scheduled to be closed by Oct. 15 is as follows:

Region 1: Providence, R. I.; Binghamton, Syracuse and Albany, N. Y.; and Newark, N. J.  
Region 2: Erie, Altoona, Harrisburg, Williamsport and Scranton, Pa.; Wilmington, Del.; Camden, N. J.; Washington, D. C.; and Roanoke, Va.  
Region 3: Saginaw and Grand Rapids, Mich.; Columbus, Cincinnati and Toledo, Ohio; and Lexington, Ky.  
Region 4: Memphis, Tenn.; Raleigh, N. C.; Savannah, Ga.; and Montgomery, Ala.  
Region 5: Shreveport, La.; Tulsa, Okla.; San Antonio and Dallas, Texas.  
Region 6: Duluth, Minn.; Green Bay, and LaCrosse, Wis.; Eau Claire, Mich.; Peoria, Ill.; Davenport, and Sioux City, Iowa and North Platte, Neb.  
Region 8: Spokane, Wash.; Sacramento, San Diego and Fresno, Calif.

Field offices which will be closed by Oct. 15 are:  
Atlantic City, N. J.; Canton, Dayton and Youngstown, Ohio; Mobile, Ala.; Knoxville, Tenn.; Springfield, Mo.; El Paso, Tex.; Cairo, Ill.; Bismarck, N. D.; Pierre, S. D.; Madison, Wis.; Lansing, Mich. and Norfolk, Va.

## WPB Revokes Automotive Production Orders

WPB has revoked the following automotive orders limiting production:

L-1-e Motor Trucks and Truck Trailers, Aug. 20.

L-2-g Automotive Vehicles, Parts & Equipment, production controls went off Aug. 24, and the ban on spare tires, Sept. 1. The fifth tire will be handled by OPA.

L-158 Production of Replacement Parts for Motor Vehicles, Aug. 20.

L-180 Replacement Storage Batteries, Aug. 20.

L-254 Internal Combustion Air-Cooled Engines, Aug. 20.

L-270 Automotive Maintenance Equipment, Aug. 20.

L-331 Motorcycles, Aug. 20.

## Defense Plant Leasing Ends

The Defense Plant Corp., a Reconstruction Finance Corp. subsidiary, has ceased purchasing and leasing trucks and trailers to truck operators. DPC now has the problem of disposing of about 1400 trucks and trailers which it purchased and leased. Lease agreements are supposed to terminate Oct. 2, but ODT has asked for an extension until Nov. 30 to give operators more time to arrange to purchase the equipment or to replace it whenever necessary. If an operator decides

to exercise his right under the purchase agreement he must buy all of the vehicles covered by the agreement. He cannot pick and choose. All vehicles not purchased will be declared surplus.

## Changes in Tire Rationing Help Fleet Operators

SEVERAL major changes in tire rationing regulations that will enable truck operators to get new tires more easily and quickly than in the past became effective Sept. 1 by order of OPA.

The changes will simplify truck tire inspection, placing it on the same basis as passenger tire inspection except that truck tires may be inspected only by OPA stations designated as Official Truck and Passenger Tire Inspection Stations. Passenger Inspection Stations handle only passenger car tires.

The changes affecting truck tires follow:

1. Emergency Truck Tire Boards will be discontinued. Their quotas of 8.25 and larger truck tires, and the work formerly assigned to them, will be handled by selected War Price and Rationing Boards. Files now held by Emergency Truck Tire Boards will be turned over to the designated OPA local boards, which will receive and handle applications for large size truck tires as well as the small sizes.

2. Central Station reinspection of truck tires will be discontinued, eliminating delay in the issuance of purchase certificates to truck operators.

3. Old truck tires need not be turned in at inspection points when they are inspected. Instead, an applicant for a truck tire, who is not an (R-19) Emergency Reserve operator, will turn in his old tire to his dealer when he buys a new one.

4. Designated areas for the issuance and inspection of truck tires, and the requirement that tires belonging to the Emergency Reserve (R-19) operators be further examined by OPA tire examiners will be eliminated. These operators no longer will have to turn in their old truck tires when they buy replacements. Instead, the Official Truck and Passenger Tire Inspection Station inspecting the tires will, on OPA Form R-21, authorize the operator to dispose of the condemned tires to a tire dealer

or manufacturer. The operator, before filing his application, must dispose of the tires and have proof of their disposition made on this form.

5. Periodic inspection of all tires used on commercial motor vehicles and the issuance of Certificates of War Necessity is eliminated by the Office of Defense Transportation, as announced by that agency.

6. Old truck tires that are turned in by buyers for new tires need not be notched as formerly required.

One change was made affecting passenger tire inspections. OPA Inspection Stations will inspect and record on the tire application Form R-1, the condition and serial numbers only of the tires to be replaced on passenger cars. The condition of tires that are not condemned is no longer required to be listed.

## Fleets May Buy Parts at Surplus "Spot Sales"

Fleet operators who can certify to previous purchase of parts on a wholesale basis are now permitted to buy surplus automotive parts direct at "spot sales" instead of going through dealers and jobbers.

The Office of Surplus Property, Department of Commerce, came to this decision because of the disappointing results at recent "spot sales."

Under the new method parts can be bought by mail on a fixed price basis. The method also embodies a discount plan, and prospective purchasers may order specific parts using their own standard parts catalogs.

A fleet operator who is interested in purchasing surplus parts may have his name placed on the list for advance announcement of future sales by writing to the regional Office of Surplus Property, Department of Commerce in the area in which he resides. Here is a list of regional offices:

Region I—Park Square Bldg., Boston 16, Mass. (Connecticut, Maine, Massachusetts, New Hampshire, Vermont, Rhode Island).

Region II—61st Floor, Empire State Bldg., New York 1, N. Y. (New York, New Jersey).

Region III—1120 21st St. N. W., Washington 25, D. C. (District of Columbia, Delaware, Pennsylvania, Maryland, Virginia).

Region IV—704 Race St., Cincinnati 2, Ohio. (Indiana, Kentucky, Ohio, West Virginia).

Region V—209 S. LaSalle St., Chicago 4, Ill. (Illinois, Michigan, North Dakota, South Dakota, Minnesota, Wisconsin).

Region VI—195 Pryor St. N. E., Atlanta 3, Ga. (Alabama, Florida, Georgia, Mississippi, North Carolina, South Carolina, Tennessee).

Region VII—P. O. Box 1407, Fort Worth 1, Texas (Louisiana, Texas, Arkansas, Oklahoma).

Region VIII—2605 Walnut St., Kansas City 8, Mo. (Iowa, Kansas, Missouri, Nebraska).

Region IX—1013 15th St., Denver 2, Colo. (New Mexico, Utah, Colorado, Wyoming).

Region X—30 Van Ness Ave., San Francisco 2, Calif. (California, Arizona, Nevada).

Region XI—2005 Fifth Ave., Seattle 1, Wash. (Oregon, Montana, Idaho, Washington).

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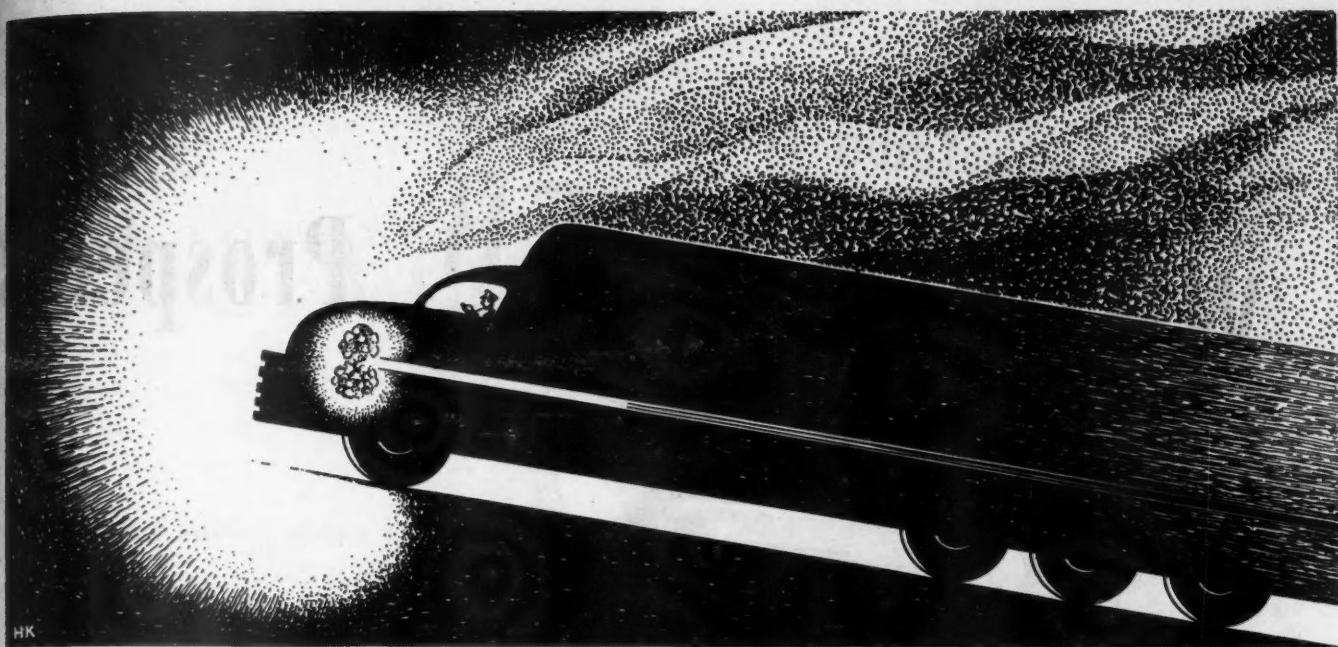
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#### POWER PLANT SIZE

One of the points concerning atomic energy that has fired the lay mind is that such a power plant for trucks probably would be very small and, therefore, considerably reduce g.v.w. and correspondingly jump payload. This may be so. Mr. Geschelin, however, takes what appears to be a more practical view.

"Maybe a fist-sized engine of some kind can produce 100 hp." says he. "It would do it at a tremendous speed, quite beyond the useful range of mechanical equipment. You would have to slow it down, just as we gear an airplane propeller or a marine propeller; or as we gear our present automotive engines. When you slow it down, you have to make it bigger."

ACCORDING to published reports it cost the taxpayers about two billion dollars to make the atomic bomb a practical instrument of destruction. We now hold an awful secret—a force capable of destroying mankind or of stepping up progress beyond belief. It depends upon how the cosmic force is used.

Despite the criticism of the use of the atomic bomb, it is well to realize that nuclear physics is a science that has been developing over the years and is the next logical step in progress. You can't sidestep it, as Kettering said about a week ago. Moreover, it is also a fact that the Nazis have known about it and were working on their own version of the bomb. The world is fortunate indeed that we, rather than the Axis, broke the secret first. Another thing, don't worry too much about atomic destruction. The fact is that only the rare and heavy radioactive materials are suitable for the purpose. They are hard to find or produce and then only small quantities are available.

## Prospects for Harnessing ATOMIC ENERGY

Power generated by unlocking the atom is simply fantastic but no one can say what type engine can utilize "nuclear" energy

by JOSEPH GESCHELIN

Commercial Car Journal, Detroit Technical Editor

Just to show you how remarkable it is that scientists have unlocked the riddle of atomic energy, we looked up a book published in 1937. At that time a famous scientist estimated that it might be a thousand years before man could do the job. However, like a true scientist, he also hedged by saying that the discovery could come tomorrow. It is quite likely that in the normal course of events, where scientists work independently and with limited funds, the discovery would still be many years off.

Man has been seeking the mastery of matter from the

(TURN TO PAGE 178, PLEASE)



# Prospects fo

**N**OW that the end of the war is an accomplished fact, prospects for unparalleled production of trucks for civilian operators are suddenly and immeasurably brighter than they were a few weeks ago. The release of materials following large-scale cutbacks in war production should open the way for output of commercial vehicles on a volume basis far beyond that of prewar days.

While the long-term possibilities of truck production undoubtedly are bright, there still are a few shadows clouding the outlook for an immediate torrent of production. In a special survey of the situation made by COMMERCIAL CAR JOURNAL a few days before the unexpected end of the war, truck manufacturers expressed the conviction that they could meet the production quotas set up for the rest of 1945 by WPB on a rated basis, and in most cases they thought they could also build the extra allotment of unrated trucks tentatively set up. Since 111,318 civilian trucks were built during the first half

of the year and the allocations on both a rated and unrated basis were 440,000 for the last half, production would have been approximately 550,000 for the year, even if the war had not ended. This is about 50 per cent of the 1941 peak year production. As it stands now, the outlook is for considerably more than that, provided that

## POSSIBLE OBSTRUCTIONS

Since 111,318 civilian trucks were built during the first half of the year and the allocations on both a rated and unrated basis were 440,000 for the last half, production would have been approximately 550,000 for the year, even if the war had not ended. This is about 50 per cent of the 1941 peak year production. As it stands now, the outlook is for considerably more than that, provided that the following three possible obstructions do not materialize:

1. Continued shortages in certain materials and components,
  2. Labor turmoil,
  3. Excessive dumping of military surplus trucks by the government.

# S for POSTWAR TRUCKS

**CCJ survey shows that, while truck manufacturers expect some difficulties, they are planning to increase production 25 to 100%; no major design changes until 1947**

by LEONARD WESTRATE  
Commercial Car Journal Detroit News Editor

## INDUSTRY FAVORS RATIONING LIGHT AND MEDIUM TRUCKS

As a result of the dammed up demand, most of the industry feels that truck rationing will stay for at least a few months yet. There was some sharp division of opinion on the effectiveness of ODT in expediting distribution, but most spokesmen thought that the present system of delegating authority to field offices to ration light and medium trucks is a step in the right direction and that rationing should be kept until supply and demand are in better balance than at present.

the following three possible obstructions do not materialize:

1. Continued shortages in certain materials and components,
2. Labor turmoil,
3. Excessive dumping of military surplus trucks.

### Forgings and Castings Still Critical

ON THE question of materials, WPB has promised that a flood of materials needed by industry will be available soon. However, officials of the Automobile Manufacturers Association are far from optimistic. They say that forgings and castings have been critical and may stay so unless some means is found to correct the pricing obstacle. They concede that military cutbacks will make more capacity available for industry, but that the demand will be three to four times as great as prewar from all civilian industry so that a competitive battle will develop, with the highest bidder getting the goods.

What is more important, they look for all ratings, such as the truck industry now enjoys, to be lifted along with production ceilings, thus putting the truck makers in open competition with all industries clamoring for steel and other materials. Heretofore, they worked under priority ratings which put them ahead of most other industries. In this connection, however, it should be noted that WPB has announced its intention to retain a simplified priority system for breaking reconversion bottlenecks, and since the truck manufacturing industry is deemed of prime importance, it seems likely that such assistance may be forthcoming if needed.

### Numerous Strikes Predicted

LABOR trouble also is a real and forbidding possibility. With the end of the war, R. J. Thomas, head of UAW-CIO, announced the revocation of the no-strike pledge, and observers predict that strikes will be numerous in the days ahead.

There has been an announced intention to press for  
(TURN TO NEXT PAGE, PLEASE)

# Prospects for POSTWAR TRUCKS

(Continued from Page 37)

higher wages, and if this develops into a struggle, prolonged strikes are bound to have a baleful effect on production.

## Truck Surplus a Problem

THE truck industry does not intend to enter into the problem of disposal of surplus military trucks. At a recent meeting in Washington with surplus property officials, representatives of the manufacturers turned down cold a proposal that they recondition and distribute such vehicles. However, they are interested in knowing just how many of these trucks the government intends to dispose of, so they can appraise the effect on the market. So far there is nothing definite on this from government officials.

Manufacturers interviewed in the survey all agree that disposal of the surplus trucks represents a real problem, since no matter what course is taken, there is bound to be criticism from some quarter. They point out that these are all specialized military vehicles, which cannot be adapted to commercial use without expensive alterations. Most of them are multiple-wheel drives, carrying a large proportion of excess weight. All of the military vehicles were built for a special purpose with cost of operation no object. It is estimated that cost of rebuilding, reconditioning, and handling such trucks would bring the cost up to nearly that of a new truck built from scratch, and it still would be an improvisation.

Other objections are that spare parts would be a problem, even though the Army has a large supply of certain ones, and that many of the trucks will not carry as heavy a payload as a commercial job of the same rating because of more unsprung weight.

## Production Expansion Indicated

ALL of the companies surveyed said they plan to expand production greatly over prewar levels, estimates ranging from 25 to 200 per cent. Just how soon they can achieve peak production is uncertain because the whole industrial picture is still in a state of flux and confusion. It will take a little time to clear plants of military work, which some companies were carrying on in addition to truck manufacture, so that full facilities are available.

So far as reconversion of assembly lines is concerned, that is no problem for the truck industry, the principal job being that of filling feeder lines with civilian com-

## AUTO BUILDERS MAY MAKE TRUCKS

Another angle to the increased production of trucks is the report that some of the independent car manufacturers are planning to enter the truck field. Two most prominently mentioned are Hudson and Nash, with Packard another possibility.



## MAJOR DESIGN CHANGES IN 1947

Truck manufacturers do not envision any major change in truck design until the 1947 models appear. While all have ideas, many of which are partially developed, they feel that their efforts now should be directed entirely toward full-tilt production of current models. Any changes in design at this time would slow production schedules when the crying need is for all the trucks that can be turned out.

ponents that are different from those used on military trucks. Since most companies have been building civilian and military vehicles on the same line, it is only a question of increasing the number of components used on civilian units. Manufacturers say that suppliers are in good shape to boost output of these items because they have been making them right along and therefore do not have a retooling problem, such as exists in the passenger car field.

At this writing, it has not been announced by WPB whether individual company allotments will be continued, but there is a general belief throughout the industry that the pressure will be toward unlimited production, rather than restrictions.

## Auto Builders May Make Trucks

ANOTHER angle to the increased production of trucks is the report that some of the independent car manufacturers are planning to enter the truck field. Two most prominently mentioned are Hudson and Nash, with Packard another possibility. While these reports still are in the rumor stage, they are not too unlikely.

All three companies have built trucks of one kind or another in the past, and a general price increase on trucks of about 25 per cent during the war, coupled with a backlog market of an estimated 2½ to 3 million units, undoubtedly offers an enticing prospect.

## 3 Years to Catch Up

TRUCK manufacturers generally believe that even though there is unrestricted production on a considerably increased scale over prewar, it still will be a long time before all the demand for new trucks is satisfied. They point to the recent Polk survey which shows that the average age of trucks still in use is 7.5 years, that nearly 1,800,000, or about 40 per cent, of the 4,419,891 trucks licensed in 1944 were manufactured before 1938, indicating a huge replacement market. One company stated that its estimate of the market contemplates that with an industry-wide production of 1.5 million annually, and a normal replacement market of about 775,000 a year, it will take three years to "catch up to the point where we'll have to go out and sell trucks."

As a result of the dammed up demand, most of the

(TURN TO PAGE 158, PLEASE)

# Wartime Truck Mortality Only 2.90%

Comparison of '41 and '44 registrations

shows a loss of 131,835 units. Average

truck operating today is 7.5 years old

## REGISTRATIONS REFLECT TRENDS

"More than 20 states had more trucks registered last year than they had in 1941. Midwest and eastern states had less registrations, while the South, southwest and West sections of the country showed increases.

"Because light trucks were not manufactured in any quantities during the war years, there has been a trend toward mediums and heavy trucks, with an increase in heavy-duty trucks also reported."

TRUCK registrations decreased only 2.90 per cent during the war years, as compared with a passenger car mortality of 12.9 per cent, R. L. Polk & Co., statistician for the automotive industry, reports. The first Polk report on truck and commercial car registrations by make, state and county since Pearl Harbor shows that 4,419,891 trucks were licensed nationally last year, as compared with 4,551,726 trucks licensed in 1941.

This represents a truck mortality of 131,835 trucks, acknowledged to be very low, due in part to the fact that the truck industry has been producing limited quantities of trucks for civilian use during the war years while passenger car production ceased entirely in 1942.

The low truck mortality indicates a huge replacement market, Polk officials believe, as obviously many trucks have continued to be used which ordinarily would have been junked, but because of war necessity have been kept running. The average truck now on the highway is 7.5 years old. Nearly 1,800,000 trucks still licensed were manufactured prior to 1938 and some 173,283 were made before 1929—16 years ago.

Like passenger car registrations, the truck registrations reflect shifting populations during the war period. More than 20 states had more trucks registered last year than they had in 1941. Midwest and eastern states had less registrations, while the south, southwest and west sections of the country showed increases.

Because of these shifts in truck ownership, Polk statis-



U. S. TRUCK REGISTRATIONS FOR '41 AND '44

Make of Truck	1941	1944
AUTOCAR	18,414	16,394
BROCKWAY	14,551	13,800
BUICK	16,596	15,918
CADILLAC	4,559	4,692
CHEVROLET	1,359,424	1,333,058
DIAMOND T	50,213	44,435
DIVCO	9,819	10,171
DODGE	423,878	416,957
FEDERAL	16,836	13,622
FORD	1,512,876	1,426,551
GMC	202,288	212,103
INDIANA	6,103	4,760
INTERNATIONAL	492,691	485,239
MACK	65,847	62,848
PACKARD	8,733	8,821
PLYMOUTH	56,039	66,713
PONTIAC	8,928	10,419
REO	32,800	25,510
STEWART	6,536	4,556
STUDEBAKER	26,782	26,875
WHITE	56,380	54,456
WILLYS-OVERLAND-WHIPPET	17,302	13,714
YELLOW	15,293	16,599
MISCELLANEOUS	128,838	132,080
Totals	4,551,726	4,419,891

ticians say that manufacturers and others basing sales quotas or potentials for new truck sales, parts and accessories on 1941 registrations were proceeding on false assumptions, as many counties where war production was concentrated had considerable increase in trucks, while other counties had decreases. The breakdown in the report by counties and states reflects this shift in industrial production.

Because light trucks were not manufactured in any quantities during the war years there has been a trend toward medium and heavy trucks, with an increase in heavy-duty trucks (more than 10 tons) also reported.



# LETTERS FROM

## Suggests Standard Nomenclature for Trucking Industry

EDITOR, COMMERCIAL CAR JOURNAL,  
DEAR SIR:

I suggest that standard nomenclature be adopted for the trucking industry and the truck manufacturing industry to designate various units and combinations of units of trucking equipment.

The railroad industry has so standardized the names of its vehicles—Box cars, Stock cars, Gondolas, Refrigerators, Engines, Mallets, 2-10-2, Consolidation, Switchers—that its designation of any type of unit is recognized in railroad parlance anywhere in the United States. This seems not to be true in the truck industry. And, moreover, the various designations that have, to some extent, been adopted are awkward, not exactly descriptive of the units named and lack uniformity in all parts of the country.

It occurs to me that you might sponsor an inquiry throughout the industry seeking suggestions and recommendations from which you could influence the adoption of standards.

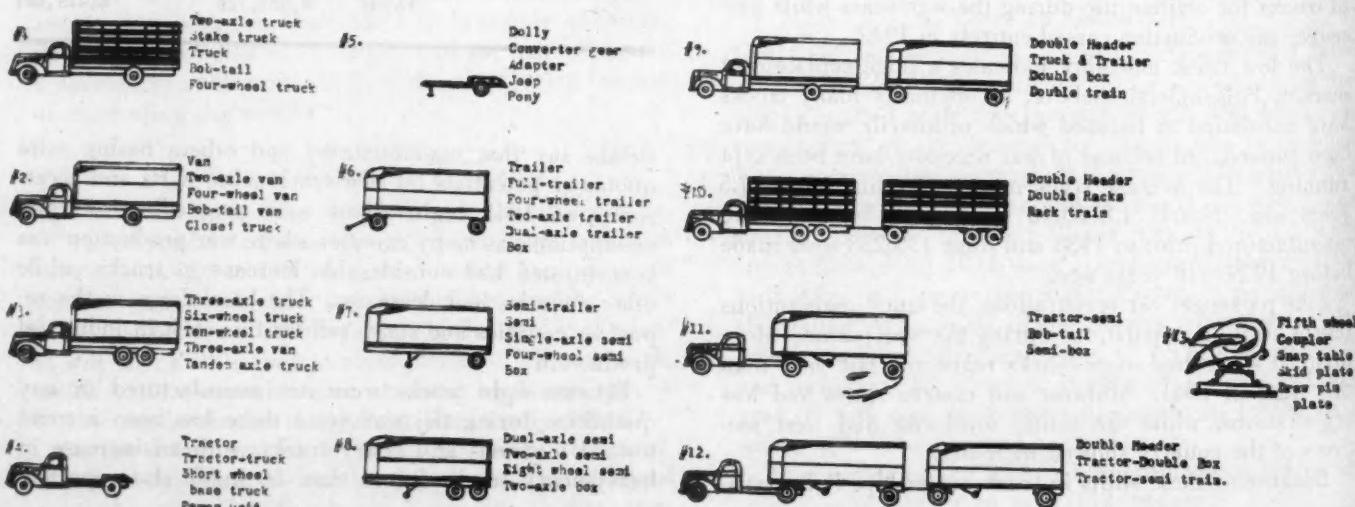
I would suggest that you circulate amongst the manufacturing and oper-

ating industry a document that would illustrate by drawings or photographs every different unit of equipment and combinations of units of equipment that are used in the trucking industry, opposite each of which would be a list of all of the different names applied to them throughout the country, with an inquiry as to which, if any, of these names should be adopted as the standard and if none, then invite original suggestions. The sketch below shows what I mean. This sketch, of course, contains merely a few, and not all, of the different types of equipment, nor does it contain all of the different names applied to them.

L. B. YOUNG,  
Vice President and General  
Manager,  
Pacific Motor Trucking Co.,  
San Francisco, Cal.

## One for the SAE

Mr. Young expresses himself excellently on a point that long has nettled and confused fleet operators, and will continue to do so until something is done about it.



This is a problem that rightly belongs in the hands of a select committee that would study it closely. We know of no better group to handle the problem than the Transportation and Maintenance Section of the Society of Automotive Engineers acting jointly with the Truck Engineering members of that same society.

COMMERCIAL CAR JOURNAL will recommend this problem to the tender mercies of that group and hope that something useful will result.

## Peace and Peacetime Maintenance Problems

EDITOR, COMMERCIAL CAR JOURNAL,  
DEAR SIR:

This is a time to give thanks for the ending of the war and also to our many friends who have helped to keep our equipment rolling by supplying ways and means to do so—such as your magazine, which has been a big factor in helping me.

I have gotten very much out of the gripe letters as well as gripes about parts books and manuals. I agree with most all of them.

Before the war, you were trying to

# READERS

put over a standard size loose leaf instruction manual of uniform size for all companies to print their instructions on, etc., but you have had too many other details since Pearl Harbor and had to drop it. How about trying to start it all over again? That is a fine idea.

Thanks again for the magazine and best wishes for the future.

W. H. BROWN,  
Dist. Equip. Supt.,  
Virginia Dept. of Highways,  
Suffolk, Va.

## We Start in October



Reader Brown correctly assumed that wartime maintenance problems superseded instruction manual improvement. He also must be psychic. The October issue of COMMERCIAL CAR JOURNAL will contain an article dealing with the advantages of standard service instruction.

## Knocks "Knuckle-Busting," Wrench-Wrecking Practice

EDITOR, COMMERCIAL CAR JOURNAL,  
DEAR SIR:



As safety supervisor of this division of the Northern States Power Co., I would like to state my views on the subject of using extension pipes on the proper handles of wrenches for additional purchase power. Well made wrenches are manufactured in various sizes and each wrench is of balanced construction and carries a maximum strain that may be applied to it. The handle of the wrench is constructed for this strain and the great pressure that can be applied by adding extra length to the handle is detrimental to the tool.

There is the added danger of the

extension pipe slipping from the wrench handle thereby causing injury to the operator, in many cases a lost time injury. Skinned knuckles, broken hands and bad falls are only a few of the hazards involved.

A wrench once strained out of shape by this method of added leverage is never again a good wrench. Sliding a piece of pipe over the wrench handle and then jumping on the pipe to start wheel nuts is poor practice. For the sake of less accidents, I hope COMMERCIAL CAR JOURNAL gives this subject plenty of space.

M. J. PERKINS,  
Northern States Power Co.,  
Mankato, Minn.

## The Right Tool for Each Job



In the interest of safety, it must be admitted that the possibilities outlined in Mr. Perkins' letter do exist.

While exponents of the pipe extension point out that for a certain wrench size the pipe length should not exceed a given dimension to avoid damage to the tool by excessive leverage, the mechanic on the job might forget or, when pressed for time, ignore the recommendation to the detriment of the tool. Moreover, even if the extension conforms to the recommendation, the possibility of slippage still cannot be denied—especially where working conditions are not ideal.

A good mechanic is judged by his knowledge of tools and his ability to use them. He knows that there is a right tool for every purpose.

Of course, there is a wrench on the market that is designed for a pipe extension. But that extension has a predetermined maximum safe leverage and is provided with a locking pin

to secure the extension to the wrench handle to prevent slippage and possible injury to the mechanic.

## Where to Get U. S. Dual Tire Gage

EDITOR, COMMERCIAL CAR JOURNAL,  
DEAR SIR:



In order to correct the statement on Page 120 of your August issue concerning dual measuring sticks, we wish to point out that they may be obtained by fleet owners from regular U. S. Tire distributors only.

Request should not be sent directly to this office but made through our local distributors.

CHARLES BRANDT,  
Publicity Dept.  
United States Rubber Co.

## U. S. Dual Tire Gages Available Locally



Because it was not included in U. S. Tire's original release, we are glad to call this fact to our readers' attention to save them the time and trouble of writing to the factory for the dual tire measuring sticks when they can be obtained more promptly from local U. S. Tire distributors.

## Ex-Trucking Men Keep Posted on Luzon

EDITOR, COMMERCIAL CAR JOURNAL,  
DEAR SIR:



I wish to express my appreciation and that of several other chaps of my outfit for your kindness in sending the COMMERCIAL CAR JOURNAL to me each month, through the Special Service Officer of our parent organization, the 317th Troop Carrier Group, APO 74. 1st Lieut. Kilroy made it possible for us to receive your publication through his efforts, after I had attempted to arrange a subscription which was impractical at the time due to postal regulations.

I want you to know how deeply we appreciate your kindness and how enjoyable the magazine is to all of us here whose interests in the post-

(TURN TO PAGE 194, PLEASE)

## TIPS FOR PREWAR GAS, TOO

The signs along the highways and at gasoline filling stations advertise the return of prewar quality gasoline. Fleets are having it pumped into their tanks. That, according to the author, is the first phase of the transition from wartime gasoline to new postwar fuel.

As for the second phase, it may be many months before full postwar quality gasoline becomes available, says Ed Paige. But once postwar engines and postwar gasoline team up, then "the full benefit of the technical progress that has been made in the last few years can be realized." At this point we get the inside dope on some angles of the technical progress and what they mean in terms of better and more economical truck operation.

But this article doesn't only concern itself with the future. There are suggestions on how to make out best with present engines and fuel. There's no need to let the transitional period go by without taking full advantage of some of the things that automobile and fuel research engineers know about getting the most out of your truck engines. This article tells you how.

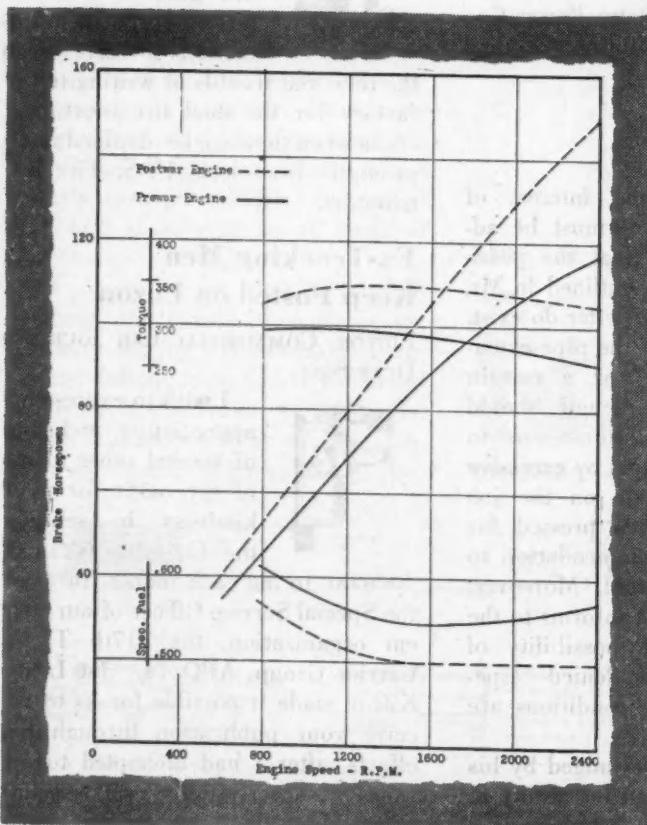


Fig. 1. Performance curves of prewar engine with prewar fuel, and postwar engine with postwar fuel. Brake h.p. has been improved by an average of 22.3%; torque, 20.1%; and specific fuel consumption, around 9%.

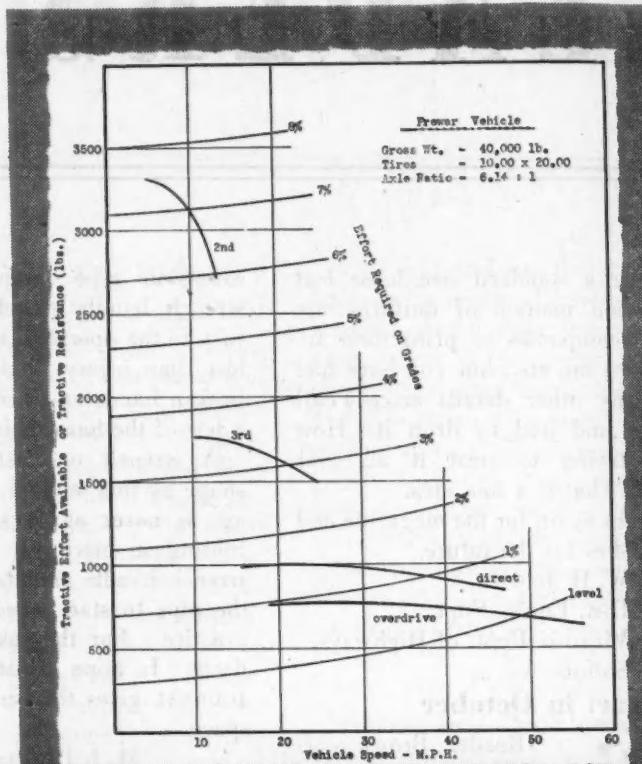


Fig. 2. Road performance plotted for the prewar engine. Lines curving from left indicate tractive effort required to maintain constant speed on level road for various grades. Other curves indicate tractive effort available at various speeds with open throttle in different gears

## Charting New



E. C. Paige

FROM a review of recent articles that have been published predicting the qualities of postwar fuels (CCJ—July, 1945) and the characteristics of postwar engines (CCJ—Feb., 1945), there can be little doubt that we are approaching a new era in motor transportation. We can fully expect that new highs in performance and economy of operation will be reached when these new products are in general use throughout the industry.

As it is economically unsound and impractical to replace an entire fleet of vehicles at one time, and as it may be many months before the quality of fuel rises from its present level to that of full postwar quality, we must expect to pass through a transition period extending over a considerable period of time before the full effect of

enlarged to 16x120

For the progressive operator this will be a time of intense activity in preparation for the competitive situation that will develop at a later date. The manpower problem will become less acute, and the parts situation will rapidly return to normal. Maintenance plans and schedules will be reviewed and revised in an effort to achieve a more economical and efficient operation. Training programs will be started to instruct all personnel in the proper methods of following the maintenance practices and systems adopted. War-weary vehicles will be overhauled and returned to first-class condition.

In order to insure the best possible performance and economy from older engines, compression ratios can be returned to standard by removing extra cylinder head gaskets or by replacing cylinder heads or pistons. Carburetors and distributors can be returned to standard specifications during normal engine overhauls. On other engines where such changes were not necessary to accommodate wartime fuels, ignition timing can be gradually returned to normal.

Many engines purchased in the near future will undoubtedly be of basic postwar design. However, they must necessarily be de-rated somewhat from full postwar efficiency in order to permit satisfactory performance on available fuels. The exact method of de-rating these engines will, of course, be determined by the individual manufacturer, but will be of such nature that relatively simple changes will enable them to take full advantage of future fuel developments.

#### Transition to Postwar Fuel and Engines

FROM the standpoint of both engineering and operations, the second phase of the transition period will be significant. With new engines powering all main operations (TURN TO NEXT PAGE, PLEASE)

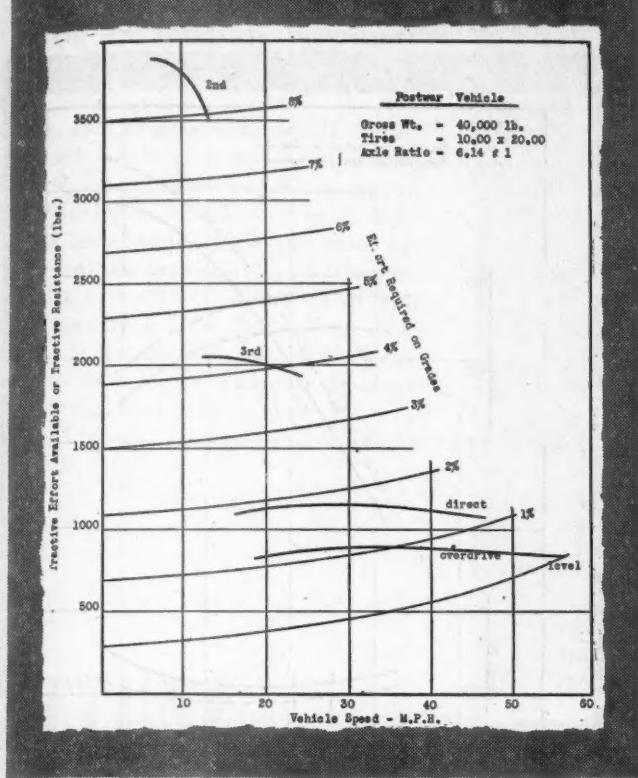


Fig. 3. Road performance plotted for the postwar engine. From these curves the maximum vehicle speed on any grade can be predicted as well as load factor when full power is not required. A speed of 56.4 m.p.h. can be attained in overdrive with no increase in fuel consumption.

# Highs for Postwar Gasoline

new designs and refining practices can be realized. Although it is not possible to predict the date on which these new products will reach the market, latest developments insure that fuel quality will increase at a far more rapid rate than the rate of replacement of old vehicles. Under these conditions the transition period may be roughly divided into two distinct phases, each of which will require special consideration if maximum performance and economy are to be expected from the vehicles and fuels in use during each period.

#### Return to Prewar Standards

THE first period has already started and will extend from the present time until sufficient new vehicles are available to operate all base schedules and main line trunk runs. During this period it is expected that operating conditions will gradually return to normal.

#### Data on postwar engines and regular grade

postwar fuel performance show that brake

horsepower and torque will be boosted by

better than 20%; fuel consumption down 9%

by E. C. PAIGE

Technical Service Department, Ethyl Corp., Detroit

# Charting New Highs for Postwar Gasoline

(Continued from Page 43)

ations and fuel of postwar quality, the full benefit of the technical progress that has been made in the past few years can be realized. New engines will no longer need to be de-rated and can be expected to deliver full performance and economy.

Although little actual data on the performance of the postwar engine is available at the present time, sufficient is at hand to enable certain comparisons to be made of the performance and economy to be expected when these engines and the necessary fuels are in general use.

In Fig. 1 the solid lines indicate the brake horsepower, torque, and specific fuel consumption of a prewar engine which has been widely used in trucking service. The performance data were obtained when operating on a regular grade fuel of average prewar quality. The dotted lines indicate the same information obtained in tests of an engine of postwar design of the same displacement when operating on a fuel which was especially prepared to represent an average postwar fuel of regular grade. An inspection of these curves indicates that brake horsepower over the entire speed range has been improved by an average of 22.3 per cent, the torque by an average of 20.1 per cent, and the specific fuel consumption by an average of 9.0 per cent.

ALTHOUGH these figures are interesting in themselves and promise much in improved operation, their true significance can be better appreciated when translated into actual differences in vehicle performance. In order to show these differences, calculations have been made assuming that each engine is operated in exactly similar chassis as a tractor semi-trailer combination having the following specifications:

Gross Weight	— 40,000 lb.
Tires	— 10:00 x 20:00
Rear Axle Ratio	— 6.14 to 1
Transmission	— 5 speed, direct in fourth
Governed Speed	— 2400 r.p.m.
Lowest Lugging Speed	— 1200 r.p.m.

From this information and the engine performance data given in Fig. 1, road performance and grade ability can be plotted for the prewar engine as indicated in Fig. 2, and for the postwar engine in Fig. 3. In these figures the lines curving upward from the left to the right indicate the tractive effort required to maintain a constant speed on level road and for the various grades indicated. These curves represent the sum of rolling resistances and air resistance at the indicated vehicle speeds. The other curves indicate the tractive effort available at the rear wheels at various vehicle speeds when operating at wide open throttle in the different gears. From these curves the maximum vehicle speed on any grade can be predicted as well as the engine load factor when full power is not required. The differences in performance and economy in road operation between the postwar engine using postwar fuel and its prewar counterpart can be

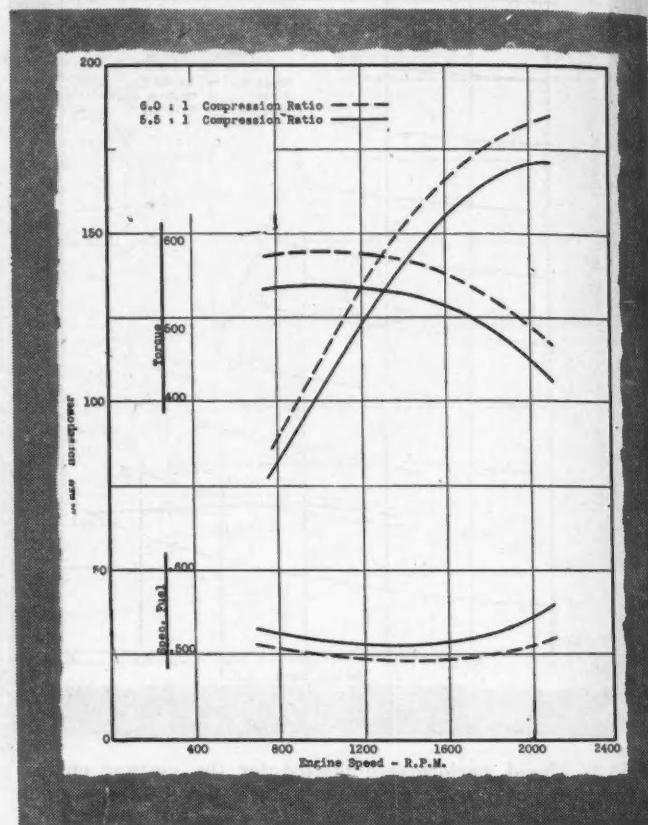


Fig. 4. Shows results of prewar engine reworked to take advantage of postwar fuels. Gains were secured by a change in compression ratio alone. Shows increase of 8% in brake h.p.; 5% in torque; 4.9% in fuel consumption

more readily seen by studying a few examples from these charts.

The maximum speed obtainable on a level road in overdrive is indicated by the intersection of the level road tractive resistance curve with the curve of available tractive effort in overdrive. In the case of the prewar vehicle, this indicates a top speed of 48 m.p.h. The postwar vehicle can attain a speed of 56.4 m.p.h. under the same conditions at no increase in fuel consumption. If, however, state regulations should limit the top speed to 48 m.p.h., the postwar vehicle would require only 78 per cent of its available power and would operate under these conditions at a fuel saving of 15.8 per cent.

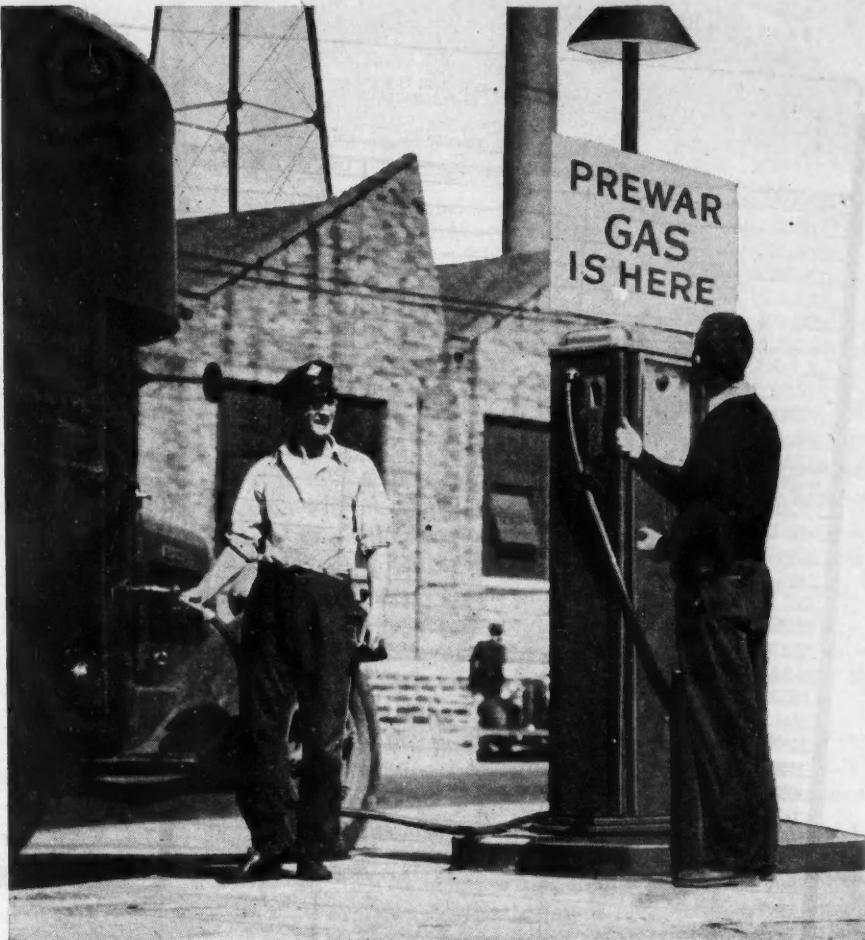
## Performance on Grades

A STUDY of operation on various grades reveals startling differences in time saved as well as decreased fuel consumption. A typical example indicates that the prewar vehicle can negotiate a 4 per cent grade at 13 m.p.h. operating at part throttle in second gear.

(TURN TO PAGE 164, PLEASE)

## FOR INCREASED POWER AND FUEL ECONOMY

"As soon as the prewar quality fuel is pumped into your tanks, every vehicle should get a Tune-up—with a capital "T". Unless it is absolutely impossible, do it immediately—don't wait until the next periodic tune-up time. By getting the job over with at once, you'll be rid of it quickly and the fleet will immediately derive the benefits of increased power and economy—and every fleet operator can stand a lot of that.



# RETUNE ENGINES

## for Prewar Quality Gasoline

NOW that rationing of gasoline has been lifted, gas stamps, CWNs and ODT mileage restrictions are only a memory. That's good. Even prewar quality gasoline has returned. That's good, too—that is, it will be after all the retuning is done. We hate to slip you that one just when you're so pleased about the outcome of the war in the Pacific, but—well, there's never a dull moment in a fleet shop.

As soon as the prewar quality fuel is pumped into your tanks, every vehicle should get a tune-up—with a capital "T." Unless it is absolutely impossible, do it immediately—don't wait until the next periodic tune-up time. By getting the job over with at once, you'll be rid of it quickly and the fleet will immediately derive the benefits of increased power and economy—and every fleet operator can stand a lot of that.

Increased power and economy are available with the return of prewar quality fuel. Retune to factory specifications

by J. ROBERTSON TURNER

Technical Editor, Motor Age

So, drag out your test benches, timing lights, vacuum gages and what-have-you. Some of you will have to buy some new equipment to meet this situation, so you had better get the order in early.

(TURN TO PAGE 196, PLEASE)

ETAWING TRANSPORTATION COMPANY DAILY UNIT INSPECTION CARD		
TRUCK NO.	TRAILER NO.	DATE
CONDITION: WHAT WAS DONE TO CORRECT CONDITIONS:		
INSPECTION OF:		
MOTOR.		
DISTRIBUTOR		
FUEL PUMP & CARBURETOR		
AIR & OIL FILTER		
GENERATOR & REGULATOR		
BATTERY & CABLES		
OIL PRESSURE		
COOLING SYSTEM		
TRANS. & DRIVE LINE		
REAR AXEL & FRONT AXEL		
STEERING GEAR		
SPRINGS & U-BOLTS		
FIFTHWHEEL & MOUNTINGS		
BODY ANCHORS		
FENDERS & BODY		
CAB DOORS & GLASS		
SEAT CUSHIONS		
HEADLIGHTS		
STOP & TAIL LIGHTS		
CLEARANCE LIGHTS		
REFLEX SIGNALS		
REAR VIEW MIRROR		
WINDSHIELD WIPER		
HORN		
WIRING		
TAILGATE & DOORS		
VACUUM LINES		
BOOSTER		
HAND BRAKE VALVE		
FRAME & CROSS MEMBERS		
FLOOR BOARDS		
HEATER & HOSE CONNECTIONS		
SPARE TIRE CARRIER		
HAND BRAKE		
Brake Away System		
<u>BRAKE ADJUSTMENT</u>		
BEFORE:	AFTER:	
RF	RF	
LF	LF	
RR	RR	
LR	LR	
LT	LT	
RT	RT	
SHOP FOREMAN:		MECHANIC:
DATE:	194	194

I, HEREBY CERTIFY THAT I HAVE PERSONALLY CHECKED THE ABOVE UNIT, AND FIND ITS CONDITION AS STATED HEREON, WITH THE EXCEPTION OF THE BRAKES, AND I CERTIFY THEM TO BE IN GOOD WORKING ORDER.

DRIVER: \_\_\_\_\_  
DATE: 194 \_\_\_\_\_

**2** **SHOP CARD**  
CHECK SERVICE TRACTOR NO. \_\_\_\_\_  
NAME \_\_\_\_\_ DATE \_\_\_\_\_  
Brakes Service  
Brakes Hand  
Steering  
Tires and Wheels  
Lights  
Reflectors  
Fifth Wheel  
Elec. connections  
Brake connections  
Windshield wiper  
Horn  
Cooling system  
Fuel system  
R. V. Mirror  
Engine  
Clutch  
Drive Line  
Transmission  
Exhaust  
Springs  
Battery

**2A** **SHOP CARD**  
CHECK SERVICE TRAILER NO. \_\_\_\_\_  
NAME \_\_\_\_\_ DATE \_\_\_\_\_  
Side Lights (Markers)  
Reflectors  
Fifth Wheel Plate  
Trailer connections  
Brake connections  
Springs  
Tailgate  
Sides  
Top  
Doors  
Floor  
Landing Gear  
Tires and wheels  
Flares  
Fuses  
Fuses  
Fire Extinguisher  
Spare Bulbs  
Jack  
Lug Wrench  
Fuel Pump

# A "Blueprint"

## THIS FLEET'S "BLUEPRINT" DROPS MAINTENANCE COSTS TO .015 PER MILE

"On a representative group of heavy tractors in 362 cu. in. class, our fuel and lubrication cost per mile is .02918 and our maintenance cost per mile is .01550 on the same group. All of this is a reduction of cost from maintenance without a system in comparison to the present PM system, where the work we are going to do is largely predetermined and mapped out by written instructions.

"In my opinion, much of the success of a preventive maintenance program, besides loyal and skilled men, is the religious following of the 'written blueprint' or routine work layout. Next, after requiring certain work to be done, somebody must be held responsible for that work. That's the way we do it."



Paul L. Andrews

WHEN I was asked not long ago just what our preventive maintenance program has done for the fleet, I replied that it just saved the whole system—THAT'S ALL.

But what fleetmen and transportation systems want to know first is costs per mile. On a representative group of heavy tractors in 362 cu. in. class, our fuel and lubrication cost per mile is .02918 and our maintenance cost per mile is .01550 on the same group. All of this is a reduction of cost from maintenance without a system in comparison with the present PM system, where the work we are going to do is largely predetermined and mapped out by written instructions.

We started our PM system in 1941 and, at the same time, added a complete motor rebuilding plant.

TOP	TRAILER
LEFT SIDE	FRONT
ET & WNC	BACK
RIGHT SIDE	ET & WNC

Indicate by X on diagrams above exact location of ALL marks, scratches, cuts, rubbed places, etc., on trailer. Indicate in RED all new marks.

TRAILER NO.	DRIVER
INSPECTED OUT by	DATE 1940 TIME AM PM
INSPECTED IN by	DATE 1940 TIME AM PM
Marker lights	
Fender wheel plate	Tail light
Reflectors	Landing gear
Light socket	Tires and wheels
Ballgate latch	Top
Bob rail	Brake hose
Back door latch	Floor
Tailgate chain	Spare tire and rack
Coupled by	General appearance
TRACTOR NO. DATE TIME AM PM	
INSPECTED OUT by	DATE TIME AM PM
INSPECTED IN by	DATE TIME AM PM
DRIVER'S NAME	
DRIVER'S REGULAR TRACTOR YES NO	
LEFT Fender	
Hood (left side)	Right fender
Hood (top)	Hood (right side)
Hood latches	Headlight (L & R)
Windshield	Radiator grill
Doors	Running boards
Seat (back)	Windshield wiper
Muffler	Floor glass
R.V. Mirror	Fifth wheel
Spare tire	Tires and wheels
Cab (back)	Cab (L & R side)
Indicate in <u>RED</u> any new marks.	

Extreme left. Form No. 1, 8½ x 13½ in., lists all parts that need mechanical attention and provides for description of repairs. Center left. Form No. 2, 3 x 5-in. shop card filled out by driver on condition of tractor and trailer (Form No. 2-A). Above at left, a 5½ x 4-in. card used for oil changes. Above. Form No. 4, 8½ x 11-in. sheet used by inspector at each terminal for listing body damages. Drivers get bonus for accident-free driving



ET & WNC is probably the only truck line in the world that owns a railroad. Above. Company truck with locomotive

out all the blanks on Form No. 1 and certify that the job has been completed. All this is done on the theory that, while the unit is in the shop for one job, all the rest of it should be checked and repaired at the same time. The essence of this is that it is required. The mechanic turns it in to the shop foreman or the maintenance superintendent who also certifies that the work has been completed and inspection has been made of the other parts.

In my opinion, much of the success of a preventive maintenance program, besides loyal and skilled men, is the religious following of the "written blueprint" or routine work layout. Next, after requiring certain work to be done, somebody must be held responsible for that work. That's the way we do it.

Work in the shop is carried out under the supervision of our maintenance superintendent, Paris Leach, who has designed many of our tools and saved much material by shortcuts and use of the equipment.

**GREASING** of units and changing of oil is handled on Form No. 3. Each unit is completely greased, oiled and filter cartridge changed each 2000 miles.

(TURN TO NEXT PAGE, PLEASE)

# for Maintenance Economy

## Plans Plus Written Directions

IN MY OPINION, when you start out on PM you must know in advance where you are going and if that is true then you must have written directions. I will outline the procedure and the forms and then give results in some detail.

The part of the shop in the PM program starts with daily use of Form No. 1. This form shows a listing of all the parts of a tractor that might need mechanical attention, and provides for a statement as to what was done to correct the condition. Form No. 1 has as its impetus a driver's report. Drivers report the condition of their tractor on Form No. 2 and condition of their trailer on Form No. 2-A. Drivers fill these cards out at the expiration of their trip.

When the shop gets a driver's complaint ticket the mechanic working on the job is required to check and fill

**Organized maintenance, based on an effi-**

**cient PM program, plus home-made tools,**

**driver bonus, forms and an equipment in-**

**spector, slash costs for southern fleet**

by PAUL L. ANDREWS

Executive Supervisor, ET & WNC Transportation Co.,  
Johnson City, Tenn.

NOTE: PLEASE GIVE INSTRUMENT READINGS BEFORE AND AFTER ADJUSTMENT WHEREVER POSSIBLE.

ET&MC MOTOR TRANSPORTATION COMPANY  
INSPECTION SHEET

TRUCK

TRAILER

DATE

	CONDITION OR READING	CORRECTED TO READ		CONDITION OR READING	CORRECTED TO READ		CONDITION OR READING	CORRECTED TO READ
MOTOR (Use Analyzer)			AXELS (Tr & TL)			BODY		
Distributor			Wheel Bearings			Cab Doors & Glass		
Fuel Pump (Loc.uation)			Wheel Brake Cylinders			Seat Cushions		
Carburetor			Brake Shoes & Linings			Extinguisher & Fused Brkts		
Air Cleaner			Wheel Alignment			Hood & Radiator Grill		
Oil Filter			Lug Bolts & Axel Studs			Floor Boards & Mat		
Oil Pump Pressure			Brake Drums			Tail Gate & Doors		
Spark Plugs			STEERING GEAR			Heater & Connections		
Ignition Wiring			Sector Shaft & Bushings			Door Latches & Locks		
Generator			Pitman Arm & Drag Link			Trailer Top & Floor		
Regulator			Steering Column Bearings			LIGHTS & ACCESSORIES		
Starter Motor			Steering Column Mountings			Head Lights		
Manifold & Gaskets			BRAKES			Stop & Tail Lights		
Oil Lines			Master Cylinder			Clearance Lights		
Gas Lines & Tanks			Fluid Lines & Connections			Reflex Signals		
Exhaust Reading			Vacuum Lines			Dash Light		
Compression Reading			Boosters			Wiring		
Vacuum Reading			Vacuum Reserve Tank			Battery & Holder		
Cylinder Head Bolts			Control Valves			Cables		
Motor Supports			Check Valves			Horn		
Fan Hub			Hand Brake Valve			Windshield Wiper		
COOLING SYSTEM			Hand Brake			Rear View Mirror		
Radiator			Hand Brake Lining			Ignition & Light Switches		
Hose Connections			Hand Brake Drums			Pedal Pads		
Thermostats			Line Pressure			MECHANIC:		
Water Pumps			Booster Full			BRAKE ADJUSTMENT		
Fan Belts			Brake-away System			BEFORE: RF LF RR LR LT RT	AFTER: RF LF RR LR LT RT	
Radiator Stay Rods			CHASSIS (Tr & TL)					
TRANSMISSION & DRIVE LINE			Spring Shackles & Bushings					
Clutch			U-Bolts					
Clutch Release Bearings			Grease Fittings & Cups					
Clutch Pedal Clearance			Fifthwheel & Journeys					
Transmission			Frame & Cross Members					
Speedometer			Spare Tire Carrier					
Front Univ. Joints			Body Anchors					
Rear Univ. Joints			License Tags & Brackets					
Drive Lines			Fenders & Running Boards					
Drive Line Housing			Bumpers & Grill Guards					
Univ. Joint Housing Bolts			TIRES (Air Pressure)	LRO	TRI	SHOP FOREMAN:		
Tork Tube Bolts			RF RRO	LRI	TLO			
			LF RRI	TRO	TJI	DRIVER:		DATE

cc: Mr. Paul Andrews  
Mr. C. H. Hodson

5

Form No. 5, 13 1/2 x 8 1/2 in., is a general inspection sheet used on each periodic 15,000-mile checkup. All engine rebuilding routine is given in detailed entry

## Maintenance Economy

((Continued from Page 47)

Unique among inspection sheets is our Form No. 4, on which inspectors at each terminal checks over tractor and trailer for evidences of any new scratches. It is designed to make it an easy matter for the inspector to record any evidences of driver scraping another vehicle or stationary object.

This blank was born of our bonus system. We have had in effect for several years a bonus system in which we pay each driver 15 per cent of his gross salary every four weeks if he has worked through those weeks without an accident.

We try to keep our regular drivers on their own units so that they will take pride in their own outfit. In order to arrive at a fair inspection on which to base the payment of the bonus we had to have a blank to record all the marks on trailers and tractors. After that it was a simple matter to record any new marks and this was fair to all concerned.

FORM No. 5 is a general inspection sheet which is used on every unit each 15,000 miles. It is used at shorter intervals if some condition necessitates its use.

Since over half of our units are Fords our Ford motor rebuilding routine is given in full detail.

New rings are installed at 25,000 miles and new inserts and wrist pin assemblies are installed if needed. The oiling system is thoroughly cleaned and tested. All other

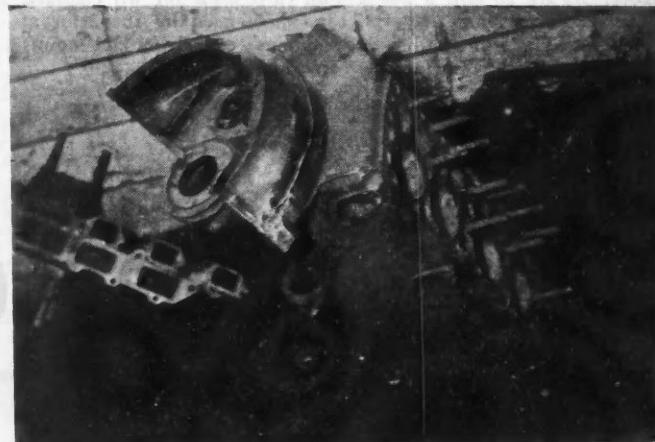


Fig. 1. Nearly all types of breaks on flywheel housings are repaired by welding. Here a section from another unit is welded to a broken case. Engine blocks are reclaimed this way

parts inside the engine are inspected and reconditioned.

At 50,000 miles the motor block is rebored to .020 oversize and rebuilt completely. New pistons, new inserts and new main bearings are installed as well as new wrist pin assemblies. Oiling system thoroughly cleaned and tested. Valves are ground and bad ones replaced. Valve springs are checked thoroughly and weak ones are replaced. Crankshaft is reground and bearings fitted when conditions warrant. All other details necessary in completely rebuilding a motor are completed.

At 75,000 miles a new set of rings are installed and

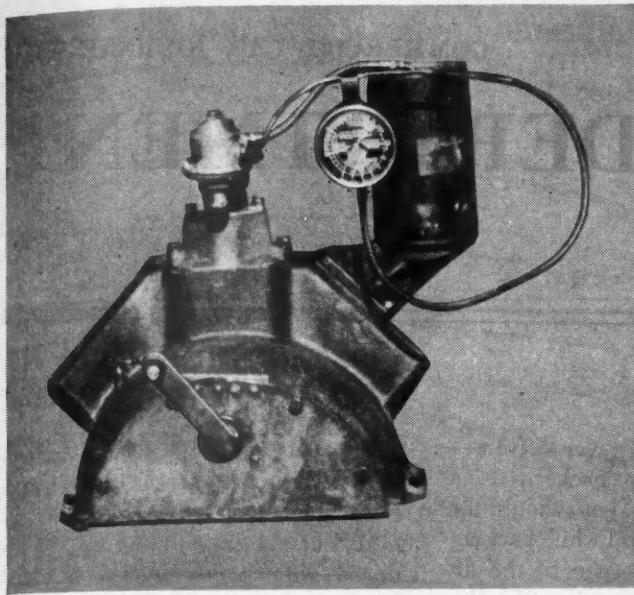


Fig. 2. Home-made fuel pump test stand made by Paris Leach, maintenance superintendent. By turning hand crank engine movement is simulated and pump can be checked for defects

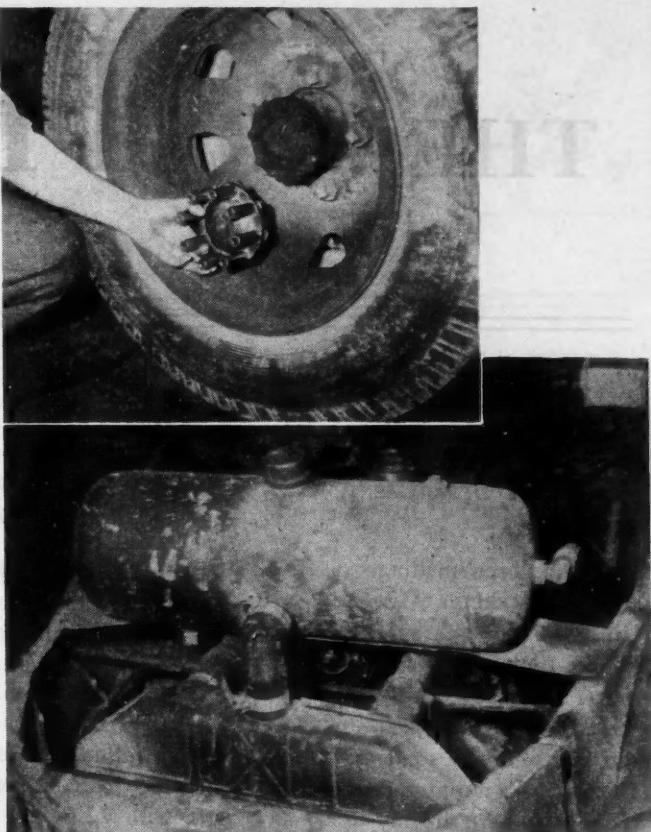


Fig. 4. This shop-designed template is used in drilling out hubs for oversize studs. Jig is bolted to hub to position the 3-in. steel guides for the drilling operation

Fig. 5. Shop-made surge tanks made from 3-gal. reserve vacuum tanks. They are mounted over the engine and are connected directly to the filler spout. This aids cooling

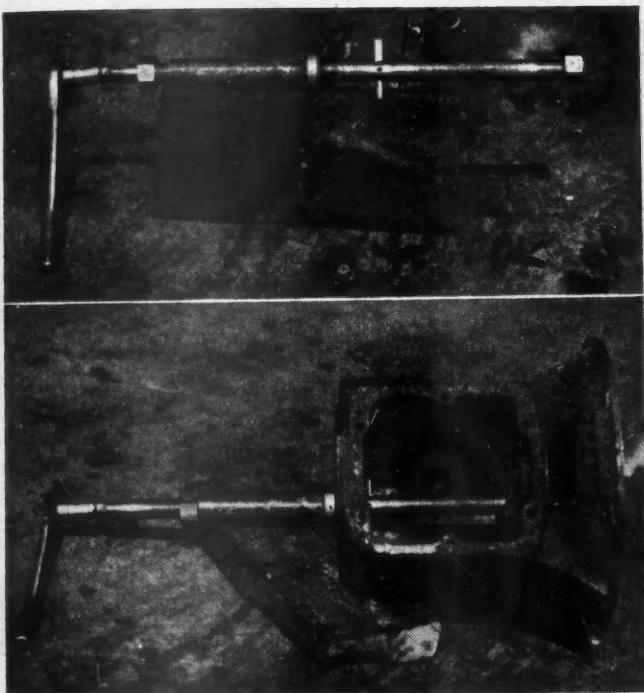


Fig. 3. Another tool designed by Mr. Leach is this fly-cutter for reclaiming Ford transmission housings and the counter-shafts. Below. Tool reams out the rebuilt bearing

same procedure followed as in first reboring job. At 100,000 miles motor block is rebored to .040 oversize.

At 150,000 miles motor block is rebored to .060 oversize and at 175,000 miles block is sleeved and sleeve is bored to standard size. It is then re-ringed, re-bored and rebuilt at same intervals as before.

#### Home-Made Tools Aid Overhauls

DURING the life of the motor block valve seats and other cracks are repaired and by this process many blocks were reclaimed that had been discarded as useless.

Now, most all types of breaks on flywheel housing are repaired by welding a section from another discarded unit, as shown in Fig. 1. Similarly, sometimes two discarded blocks can be made into one good block by that method.

Starters, generators, carburetors and fuel pumps are overhauled in our own shop. Mr. Leach built a test stand, shown in Fig. 2, for testing Ford fuel pumps which have been overhauled. By turning a hand crank the engine operation is simulated and it pumps gasoline just the same as if installed on the unit, thus insuring that it will be in working condition when taken from our stock.

At each motor overhaul, transmission is inspected for bad bearings, bad gears, bad clutch discs, bad pressure plates and the transmission is cleaned thoroughly and new grease is installed.

One of the things that happens to Ford transmissions is wear inside the transmission case allowing the counter-shaft too much end play. There is no replacement way to cure this except to replace the transmission housing because the wear is on the face of the bearing surface. This is the way we repair such wear: First, the mechanic builds up the worn bearing surfaces inside the transmission case with bronze, using a welding torch. Then he uses a special tool made by Mr. Leach which consists

(TURN TO PAGE 138, PLEASE)

# THE GRIPE DEPARTMENT

## Two Safeguards

THE GRIPE DEPARTMENT,  
GENTLEMEN:

I have been reading the COMMERCIAL CAR JOURNAL for quite some time now, and never an issue goes by that someone isn't griping about something or another. So-o-o-o here are my gripes:

**DOORS** — Too often one reads in a daily paper where a truck driver was burned to death after upsetting or after having an accident—because he couldn't get the door open in time to escape. Anyone who has been in such a spot, or seen that occur, can understand my gripe. I have been in that spot.

As a truck is traveling forward, it is bucking a strong wind, the velocity being determined by the truck's rate of speed. Have you ever tried to open the door of a truck while it is in motion? Pretty hard, isn't it?

Why don't the manufacturers reverse the handle and the hinges of the doors so that the doors will open front, towards the rear? This would be, of course, invaluable to the thou-



**\$10  
AND  
\$25  
BOND**



sands of coal and gravel drivers—drivers who have to back up to a dump or a hopper. Then, should the truck get out of control while backing up, the door would open in the direction the truck was going, thereby affording the driver at least an even chance of escaping without being dragged down a steep embankment.

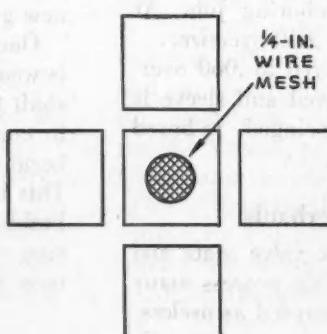
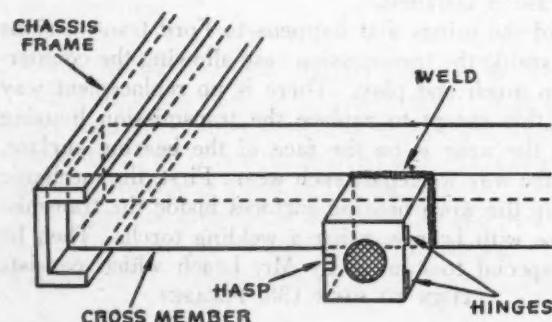
**TAIL LIGHTS**—Why not place the tail lights between two frames so that they cannot get broken? Or cover with a box, the front cut open to the size of the tail lamp, which would serve the same purpose. The box can be hinged at one side. Thus, when a bulb burns out, unlatch the box, replace the bulb, close the box and all is hunky-dory.

Our whole fleet is thus equipped—the result being, *no broken tail lights to date this year*. The price? About 15c each.

Attached are two drawings, one is a detail showing the construction of the tail light guard; the other shows its location, as installed on the chassis of a truck. There is no standard dimension, as the tail lights on trucks vary as to size.

You might be interested to know that I have applied for a patent for this guard.

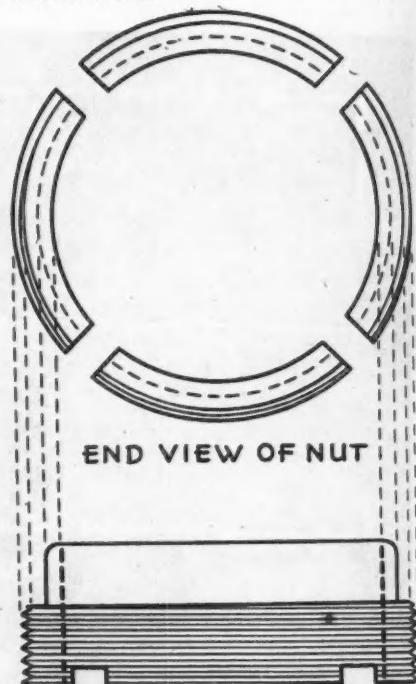
ROBERT KACHMARIK, Yard Supt.,  
Russell Coal Company,  
Denver, Colo.



## Easy Nut to "Crack"

THE GRIPE DEPARTMENT,  
DEAR SIRS:

My current gripe has to do with a certain hard-to-get-out screw adjusting nut. It holds the grease retainer on the rear wheels of a well-known truck.



END VIEW OF NUT

This nut is set in with two split pins through the slots to keep it from backing out. But, brother, they don't need the pins to hold that nut in!

The mechanics in Brooks' shop really do suffer when they try to get one of these nuts out. I have seen the men work and cuss for two solid hours trying to remove one of these nuts, using four point wrenches, hammer, punches, chisels and bars, finally winding up with welding torch to get it out. It was a good nut when put in but look at it after getting it out—scrap iron.

I dare say one out of every two of these nuts are ruined. Time and

**PAY \$10 FOR EVERY GRIPE PUBLISHED AND each month one of the Grips**

**will receive an extra award of a \$25  
WAR BOND**



material is lost and the job hard on any mechanic. It would be lots better to make a nut without threads and drive it in and it wouldn't work out either.

G. W. LAYNE, Mechanic,  
Brooks Transportation Co.,  
Richmond, Va.

#### Where's the Oil Filler Pipe?

THE GRIPE DEPARTMENT,  
GENTLEMEN:

My gripe is about the crazy places that the car manufacturers locate the oil spouts for putting the oil in a car. Also, why can't they agree upon putting the oil on one certain side, so that you wouldn't ever make a mistake and go to the wrong side and put time and effort in getting the hood open?

That's another gripe. Hoods open different on all cars. They should be made to open at least somewhat the same.

Now that cars can be made again, manufacturers should make these different things more or less identical. It wouldn't hurt the design at all, and it would certainly save a lot of effort and time.

BOB MOLO, Mechanic,  
Dubuque, Iowa.



#### Speaks for the Little Man

THE GRIPE DEPARTMENT,  
DEAR SIR:

May I add a little kick to your "Gripe Department?" I have driven trucks of almost every make,

**\$10**

**For Mechanics, Foremen, Superintendents, Supervisors,—in fact all connected with the maintenance and operation of fleets, who want designers to give more thought to making post-war trucks easier to maintain and repair and less costly to run**

"The Gripe Department" invites fleet mechanics and all others connected with fleet maintenance and fleet operation to send in their gripes. For every griping letter published in this department, COMMERCIAL CAR JOURNAL will pay \$10. In addition,

the best letter each month will receive a \$25 War Bond. Choice of letters for publication and for the War Bond will be made by the Editors of COMMERCIAL CAR JOURNAL. Choice will be determined by the content and not by style of writing or appearance.

Address your letter to THE GRIPE DEPARTMENT,  
COMMERCIAL CAR JOURNAL, PHILADELPHIA 39, PA.

both civilian and GI, and have found the same awkward fault in almost every vehicle made: No truck was ever designed for a short man!

Isn't it possible for makers to equip cabs with *really* adjustable seats? Bucket seats are surely the most comfortable and the most easily adjusted, but I realize they are somewhat impractical in lighter trucks with comparatively small cabs. There is nothing more tiring than riding all day bolstered up with improvised cushion arrangements . . . and certainly nothing more a threat to the safety-efficiency of the driver.

I've known countless individual truck owners with 1½-ton rigs who have taken each new truck to a body builder to have the seating arrangement changed to better fit their requirements.

JAMES A. CARR, Staff Sergeant,  
Luzon, P. I.



**Engine, Transmission Supports**  
THE GRIPE DEPARTMENT,  
DEAR SIRS:

I think that too little attention has been given to the motor and transmission supports on some of our popular makes of cars. It seems to me with the staff of engineers that they have, that there could be some changes made to correct this mechanical error that has cost fleet owners, as well as private car owners, too many dollars and the service men too many headaches.

Take the front supports first. They are so installed that in some cases it is necessary to remove the radiator  
(TURN TO PAGE 296, PLEASE)

# SERVICE MANUAL GRISES



**Wants Elementary Simplicity**  
**THE GRIPE DEPARTMENT,**  
**DEAR SIRS:**

The service manual is the mechanic's most reliable source of information. Therefore, let us make it simple to read and understand.

**\$10**

Most of the service manuals are so confusing that it does not help the man working on a hurry-up job. Too much time is required to find the subject in question, and it is not always helpful when found.

The auto manufacturers make several models. Each of these models should be indexed in a separate volume under the proper heading. One very popular manual lists all of the models but when describing a part which will fit one or more of the models, it directs the reader to "refer to subject so and so under item such and such in section so and so." By now the reader has forgotten what he was searching for, gives up in disgust and does the job the hard way.

All illustrations should be marked to show which is the front, rear, right or left side. The reader can then determine at a glance from which side he is viewing the subject. All parts should be named in the mechanic's language and part numbers listed. All assembled units, such as transmission, differential and many others should have two illustrations. One showing all of the parts in position to be assembled and the other a cut-away showing the assembled unit.

Besides illustrating the parts and

What's wrong with the Service Instruction Manuals, and bulletins that are issued by automotive manufacturers? What changes would you like to see made in postwar service manuals?

New postwar vehicles, parts, accessories and equipment will require new service instructions. Now is the time for mechanics and shop foremen to tell factory service men how those instructions should be prepared for maximum usefulness.

**\$10 FOR A LETTER—MAYBE A \$25 WAR BOND, TOO**

For every letter published COMMERCIAL CAR JOURNAL will pay **\$10.00**.

In addition, the best letter each month will receive a \$25 War Bond. Choice of letters for publication and for the War Bond will be made by The Editors. Choice will be determined by content and not by style of writing or appearance.

Address your letter to THE GRIPE DEPARTMENT, COMMERCIAL CAR JOURNAL, Philadelphia 39, Pa.

their respective places, there also should be an explanation of the functioning of these parts, their common ailments and some sure and quick remedies.

Examples: Explain the flow of fuel from the gas tank through the carburetor, the necessity of proper float level act. Discuss in detail the automotive electricity starting from the battery. Explain the flow of current using the color code. Give an explanation of the voltage regulator, the resistor, the coil and the condenser, also their purposes. Explain the distributor, the vacuum spark control and its adjustments.

Have you ever seen a doctor's library? Although the doctor has attended colleges and universities, he still refers to his library.

Many of our mechanics today are inexperienced and are learning the hard way. Help them by giving them a good simplified service and instruction manual.

MILO R. SHUCK, Garage Foreman,  
Railway Express Agency,  
Sioux City, Iowa.



**The A, B, C's  
of a Good Service Manual**  
**THE GRIPE DEPARTMENT,**  
**GENTLEMEN:**

The opinions expressed in this letter are the result of 10 years' mechanical experience with a large truck factory branch and over three years' in military service, two years of this being spent overseas.

There is no service manual today that fits into every truck owner's maintenance or operation program. The manual now produced is not suitable for any size service organization. In most cases, if the small operator has two or three trucks the service manual is

(TURN TO PAGE 200, PLEASE)

**\$10  
AND  
\$25  
BOND**

# HEARD BY THE GREASEMAN

by PETE R. OLEUM



A city driver asked Gabriel, the yardman who likes to eat, to make a hook-up at noon. "Can't," said Gabriel, "I'm on my lunch hour." "You mean your lunch day," said the driver. "You've been eating every time I saw you this morning."

• • •

"What are you eating, flowers?" Joe the mechanic with the hang-overs asked Gabriel who was munching on green onions.

"I don't feel like eating," said Joe. "Yesterday I had beer, cucumbers, tapioca pudding, ice cream, and birch beer."

• • •

The Boss had a tough night on a breakdown with a green driver he took along in a hurry as a helper. "I might as well have taken my wife along," he said, telling of his difficulties.

• • •

A mechanic was under a truck with a transmission on the floor, without gear shift rod, trying to put on universal flange nut on shaft, which kept turning with the nut. His helper was above him.

Mechanic: "Can't you get that thing in gear yet, to stop it from turning?"

Helper: "You come up and try it." (Aside) "That ought to either shut him up or get it in gear."

• • •

Pete the Helper, working for hours on a fifth wheel axle with emery paper, trying to rub it down so it would turn easier:

Pete: "This would make some fellows crazy."

Tireman: "Well there are some you can't make crazy."

Old Timer: "Why don't you take it over to the buffer."

Pete: "Too heavy."

Old Timer: "Oh, Hell!"

Pete: "OK, you hold it up to the buffer and I'll run the buffer."

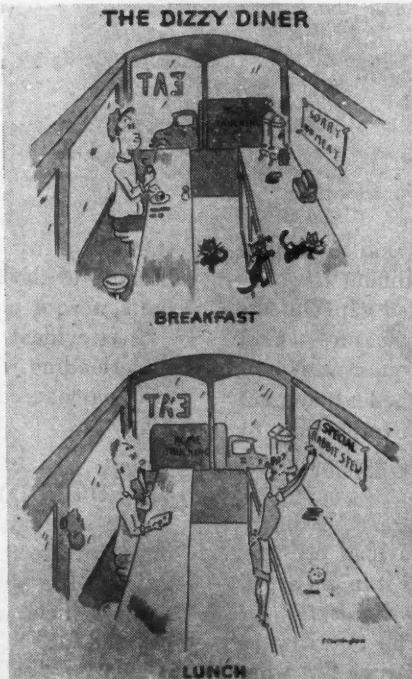
SIGN IN A GARAGE:  
"IF WE CAN'T MAKE IT RUN IT MUST BE A SNAIL"

Two B-38 Lightnings zipped over the yard recently during a War Bond Drive, doing 200 m.p.h. or better. Boss to goggle-eyed Yardman, "Gabriel, unhook those when they come over again."

The Old Timer told the inquisitive cop who wandered into the shop recently that rats made the holes in the blown pistons but that they just plugged them with corks and they were as good as new.



Rosie spent a lunch hour on a hot day gassing with the boys around a tractor. One said he would like a swim. Another said a beer. Still another said a beer with Rosie. "Just Rosie for me," said Eddie the Wolf simply.



One of the helpers bought a set of feeler gages recently for 79c. The Old Timer borrowed them and returned them badly bent. "Hell," he said, "these bend so easily I could set the valves without taking the cover off."

Dizzy who shuffles around in rubbers all year told the Boss, after working on a motor tune-up, that the spark plug gaps were so wide he checked them with a putty knife.

ROSIE SAYS THE SHOP IS FULL OF CRACKED BLOCKS AND LOOSE NUTS.

And the boys went around for a week calling Clancy, also known as the Brain, a "gee-oik" before he found out it meant jerk.

In a rush week Pete the Helper got away behind on his time sheets. But each day the harassed Boss kept telling him to let them go, it would only take a minute to fix them up, and the Boss would help him. Pete finally sat down Saturday evening at five o'clock with a hundred and one jobs to be accounted for, looked across the desk at the Boss and said, "Well, Boss, the minute's here."

"What's the matter" asked the visiting Driver watching a convoy arrive with two rebuilt tractors "are they so lousy they won't run by themselves?"

Bullhead, the loudest thing in the shop, drove in and roared, "That damn cab is ready to fall apart. I fell out of it last night!" "There, there," soothed the Old Timer "we'll have a safety belt for you tonight."

Rosie comes into the shop quietly sometimes and hears things she shouldn't. Recently, the boys told her they were going to tie a little bell on her pretty neck.

(TURN TO PAGE 298, PLEASE)

# The LOAD is the Key

## to Tire's Net Ton-Mileage

Seeking a true yardstick for maximum tire economy, transportation engineer finds the larger the payload is to g.v.w., the poorer the tire's net return in payload ton-miles.

### FOR MAXIMUM TON-MILES, PAYLOAD BALANCE MUST BE EFFECTED

"What is the true yardstick of maximum tire economy?" wondered Fred H. Purdy, transportation research engineer of Canada Dry Ginger Ale, Inc. "If I can uncover the answer to that question, I will have the key to getting the last dollar of service out of every ounce of tire."

He did uncover the answer. Briefly, this is it: "A balance must be effected between

gross loading and total tire mileage life such that the relation of the payload to the gross vehicle weight will result in maximum ton-miles payload."

If that statement seems too concise, the article and the accompanying chart and tables will fill in all the details. But that summation is worth memorizing. It is the key to maximum tire mileage efficiency.

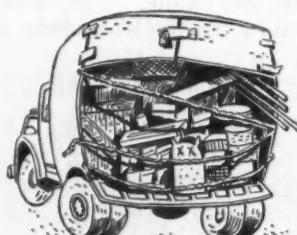
by PHILIP RUSKIN

THE tire shortage and the attendant rationing of this vital truck item hasn't been exactly fun or the type of experience one would especially recommend as a desirable pastime. However, there seems to be a little good in every adversity.

Fred H. Purdy, transportation research engineer of Canada Dry Ginger Ale, Inc., did his share of thinking and talked to himself in the process. One of the things he said to himself was, "What is the true yardstick of maximum tire performance? Is the tire manufacturer's rated capacity the best measure, or, if not, what is the best measure? Cost per mile for tires is not the question. The question is how to get the most number of tons hauled for the least amount of tire wear. It is evident that blind overloading or cautious underloading will not produce the desired maximum ton-mile performance."

He did uncover the answer and it was this: Maximum tire economy means maximum ton-mile payload per tire, or per set of tires. This is not as obvious as it might seem. Note that there are two variables: *Tons and miles*.

One way to get high ton-miles would be to carry as large a load as the payload space would carry. But what



would this do to tire life? It would sharply reduce the mileage of a set of tires and result in poor tire economy. What if we carried an underload in order to increase tire life? We would make tires last longer but would defeat the essential purpose of motor transportation; namely, to deliver goods on time and in the required quantity. Extra trips or more trucking units would be both uneconomical, from the standpoint of overall operating cost, and impractical because of the limited availability of additional trucking units, new or old.

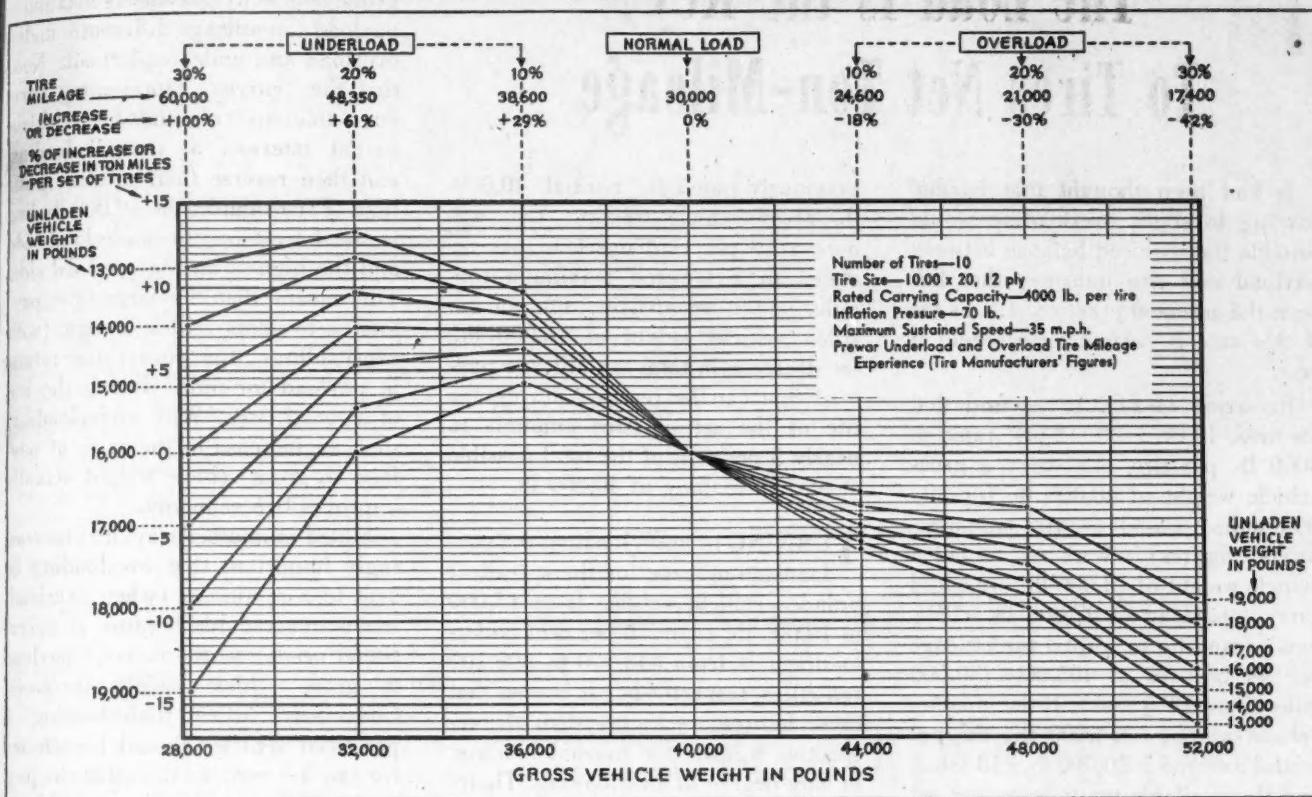
It is evident that injudicious overloading or excessive underloading will not produce the desired maximum ton-mile payload economy.

#### Key to Maximum Ton-Miles

FRED PURDY, in giving us the complete solution to the tire economy problem, puts it this way: "A balance must be effected between gross loading and total tire-mileage life so that the relation of the payload to the gross vehicle weight will result in maximum ton-miles payload."

(TURN TO PAGE 56, PLEASE)

**FIG. 1. EFFECT OF LOAD ON TIRE MILEAGE—10.00x20, 12 PLY**



**Gross Vehicle Weight in Pounds**

UNLADEN VEHICLE WEIGHT IN POUNDS	28,000	32,000	36,000	40,000	44,000	48,000	52,000
<b>TON-MILES PER SET OF TIRES</b>							
13,000	450,000	459,325	443,900	405,000	381,300	367,500	339,300
14,000	420,000	435,150	424,600	390,000	369,000	357,000	330,600
15,000	390,000	410,975	405,300	375,000	356,700	346,500	321,900
16,000	360,000	386,800	386,000	360,000	344,400	336,000	313,200
17,000	330,000	362,625	366,700	345,000	332,100	325,500	304,500
18,000	300,000	338,450	347,400	330,000	319,800	315,000	295,800
19,000	270,000	314,275	328,100	315,000	307,500	304,500	287,100

Fig. 1, above. The graph shows that the average mileage of a set of 10 tires—10.00 x 20, 12 ply—is 30,000 at the manufacturer's normal rated load. For an unladed vehicle weight of 13,000 lb. (40,000 g.v.w.) this would give 405,000 ton-miles per set of tires, as shown in the table below the graph. Up to a certain point, underloads will increase the ton-miles per set of tires. Overloads invariably decrease the maximum available ton-mileage. Fig. 2, below, shows data similar to Fig. 1, without the graph, but the tires are 11.00 x 20, with a rated carrying capacity of 4500 lb. per tire. All other data—inflation pressure, number of plies, maximum sustained speed—are the same. It will be observed that although the unladed weight and g.v.w. naturally are heavier, the figures (consequently, the graph pattern) show the same general results as in Fig. 1. For example: A 20 per cent underload nets a 61 per cent mileage increase per tire and a 20 per cent overload results in a 30 per cent mileage decrease in both tables.

**FIG. 2. EFFECT OF LOAD ON TIRE MILEAGE—11.00x20, 12 PLY**

TIRE MILEAGE % INCREASE OR DECREASE	UNDERLOAD			NORMAL LOAD			OVERLOAD		
	30%	20%	10%	30,000	24,600	21,000	17,400	14,000	10,000
<b>UNLADEN VEHICLE WEIGHT IN POUNDS</b>									
15,000	495,000	507,675	492,150	450,000	424,350	409,500	378,450	369,750	350,000
16,000	465,000	483,500	472,850	435,000	412,050	399,000	361,050	345,000	325,000
17,000	435,000	459,325	453,550	420,000	399,750	388,500	357,000	334,950	314,000
18,000	405,000	435,150	434,250	405,000	387,450	378,000	348,000	328,250	308,000
19,000	375,000	410,975	414,950	390,000	375,150	367,500	343,650	323,000	303,000
20,000	345,000	386,800	395,650	375,000	362,850	357,000	337,000	317,000	300,000
21,000	315,000	362,625	376,350	360,000	350,550	346,500	326,250	310,000	293,000

# The Load Is the Key To Tires Net Ton-Mileage

It had been thought that normal loading to slight overloading would provide the required balance between payload and tire mileage; that has been the accepted practice. Let us see if this rule is correct, or wherein it errs.

Referring to Fig. 1, we find that 10 tires, 10.00 x 20, 12-ply, rated at 4000 lb. per tire, can carry a gross vehicle weight of 40,000 lb. for 30,000 miles (based on tire manufacturers' figures). With an unladen vehicle weight of 13,000 lb., we could carry a payload of 27,000 lb. (13½ tons) resulting in a total ton-mileage per set of tires of 405,000 (30,000 miles times 13½ tons). If the unladen vehicle weight is 14,000 lb., the potential payload is 26,000 lb. (13 tons) and the available ton-mileage per set is reduced to 390,000 (30,000 miles times 13 tons). Ton-mileage maximums are also shown for unladen vehicle weights up to 19,000 lb. They decrease, of course, as the empty vehicle weight increases.

## Overloads Decrease Ton-Miles

NOW, let us see what happens if the tires are overloaded 10 per cent. The gross vehicle weight is now 44,000 lb. and the tire life, 24,600 miles. For an unladen vehicle weight of 13,000 lb., the ton-mileage payload potential during the life of the tires is 381,300. Other unladen vehicle weights show a decrease in total ton-mileage with increases in these weights. Compare these ton-mileage figures with the equivalent results

previously noted for normal, 40,000-lb. gross vehicle weight. You will note a 10 per cent overload has resulted in a lowered maximum ton-mileage per set of tires. For an unladen vehicle weight of 15,000 lb., the decrease in total ton-mileage payload that can be realized during the life of the set of tires amounts to nearly 5 per cent of the total possible at normal loading of 40,000 lb.

**TURNING** to underloading, the payload ton-mileage for the spread of unladen vehicle weights from 13,000 to 19,000 lb. (with 10 per cent underloading) is from 443,900 to 328,100 ton-miles, respectively. It is seen that these figures are higher than the respective figures for normal loading, or any degree of overloading. Therefore, for maximum ton-mile payload tire economy, it is evident that underloading will give best results. But how much underloading should we have?

The amount of underloading required for maximum tire economy depends upon the unladen vehicle weight. For an unladen vehicle weight of 13,000 lb., a maximum ton-mileage of 459,325 is attained with a 20 per cent underload. The same underload of 20 per cent is best until we get to an unladen vehicle weight of 16,000 lb. in which case 10 per cent underloading provides slightly higher ton-mileage than 20 per cent underloading. Higher unladen vehicle weights also have a maximum at 10 per cent underloading.

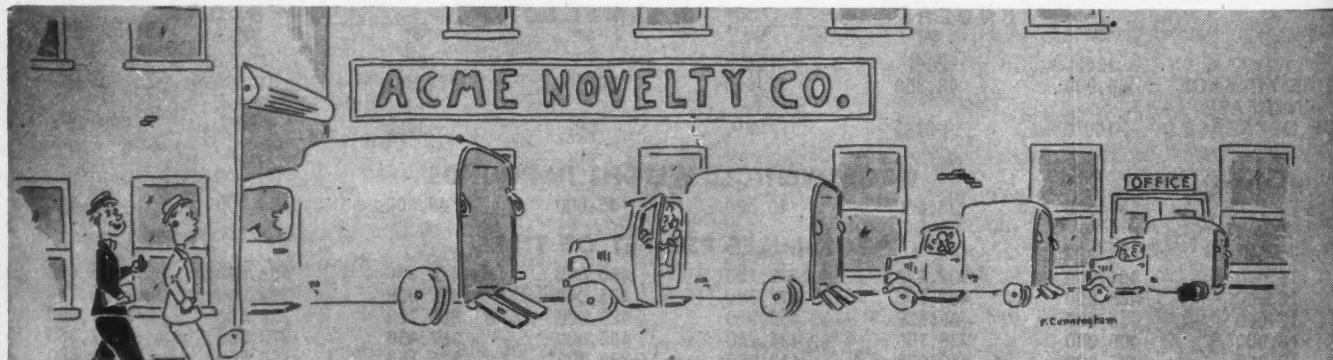
An interesting fact disclosed by this

graph is that the ratio of payload to gross vehicle weight affects maximum payload ton-mileage differently under overload and under underload. Note that the "curves" representing various amounts of unladen vehicle weight intersect at normal loading and then reverse their relative position. For example, the 19,000-lb. line is the lowest on the underload side and the highest on the overload side. This means that the larger the payload is to gross vehicle weight (with overloading), the poorer the return in payload ton-miles during the life of a set of tires. With underloading, such an increase in the ratio of payload to gross vehicle weight actually improves tire economy.

Stated in another way, it is increasingly important that overloading be kept to a minimum (when overloading is unavoidable because of operational needs) as the ratio of payload to gross vehicle weight increases. Conversely, when underloading is practiced vehicles should be selected for specific services such that the payload will be as large as possible in proportion to the gross vehicle weight. This bit of information should be helpful both in utilizing existent equipment with maximum efficiency and in selecting new units for particular operations.

Fig. 2 shows an analysis of tire economy similar to that covered in Fig. 1, with the exception that the tire size has been increased to 11.00 x 20, 12-ply. Graphs for this and other tire sizes can be plotted by the individual without difficulty by starting with tire rating capacities and tire life figures under various degrees of overload and underload—information readily obtainable from tire manufacturers, which is based on experience.

(TURN TO PAGE 154, PLEASE)



"Boy—is the Old Man in a rut on that 'nested series' idea!"

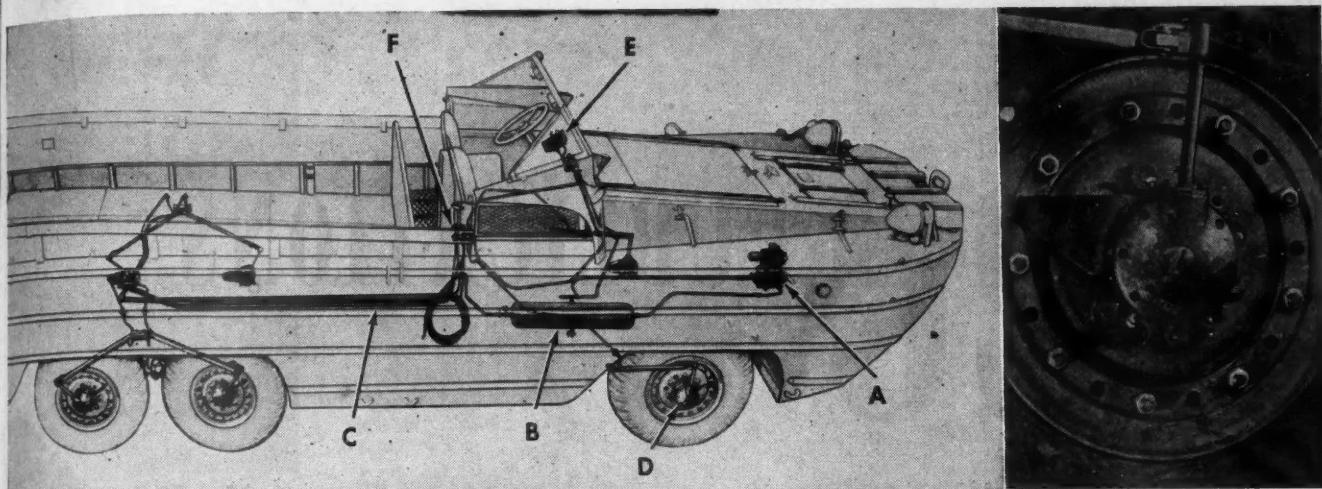


Fig. 1. Phantom view of "Duck", showing the six basic units of tire pressure control system. Fig. 2, right. The special hub designed as a rotating pressure point

ONE of the outstanding features of the GMC "Duck," the amphibious vehicle which is boat and truck combined, is a system of central tire inflation which enables the driver to inflate or deflate any or all tires while the vehicle is stationary or moving at full speed on land or water.

Through this unique development, over-or under-inflation of tires is held to a minimum, and tire pressures may be adjusted to give the vehicle maximum performance on all types of terrain.

After several experimental set-ups made by the GMC Truck & Coach Division of General Motors, builders of the "Duck," the system in its present form was perfected in February, 1943.

Referring to Fig. 1, the essential units are:

- (A) Air compressor pump, located toward the front of the engine, and running constantly with it.
- (B) Compressed air storage tank.
- (C) Air lines from the air reservoir to the wheels.
- (D) Rotating pressure joints attached to each wheel hub.
- (E) Tire pressure gage and inflation control lever on the instrument board.
- (F) Control valves for each of the six air lines carrying air to the tires.

The crux of the central inflation system is the hub device of special design, Fig. 2. Actually, this is not a hub, as such, but a rotating pressure joint which is attached to the wheel hub by means of special studs and set screws. The inner or rotating member turns with the wheel, the outer or stationary member is restrained from turning by a flexible strut arm attached to the body of the vehicle. The air hose connecting the air line and the hub is carried within, and protected by the strut arm.

Within the rotating joint is an air seal, Fig. 3. This is located at the point where the hardened-steel nose piece

## Details of "Duck's" Tire Pressure Control

**Unique system consisting of six basic parts enables driver to regulate pressures from central controls at any time**

of the rotating member is in contact with the plastic disc of the outer or stationary member. By accurate grinding of the nose piece and a fine adjustment of the plastic disc an air-tight seal is obtained. A special, precision, heavy-duty ball bearing, maintains close alignment between the two members and insures long life for both the joint and the air seal.

Special precautions were taken to seal the unit against sand and salt water. A large spring-loaded seal of synthetic rubber is extremely effective in preventing the entrance of salt water. Its design permits the release of pressure from within caused by the rapid expansion of heated air or when the unit is lubricated. An auxiliary outer seal prevents the entrance of dust or water-borne sand.

The main control valve for inflating or deflating is located on the instrument board directly in front of the driver. The tire pressure gage shows tire pressure at a glance. Individual valves for each of the six air lines are located on the left side of the gunner's seat. These are

(TURN TO PAGE 158, PLEASE)

# free PUBLICATIONS

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## L11. Radiant Heating Folder

An application of radiant heating in a modern industrial garage and service station is the subject of a new 4-page folder which is available to the fleetman and garage owner.

The folder, known as Case Study No. 5, describes the installation of the system within the building, the design of the wrought iron pipe heating coils, the major parts of the system and its cost.

Photographs show overall sections of the installations as well as close-up details of assembly of the wrought iron pipe into the grids. Methods of pouring the concrete floor slabs over the pipes are also illustrated.

A copy of the 8½ x 11-in. folder will be sent free to anyone writing L11 on the enclosed postcard.

## L12. Bearing Installation Chart

A new, illustrated 14 x 18-in. wall chart on "Standard Practice Instruction for the Proper Installation of Main and Connecting Rod Bearings," has been made available to the fleetman and mechanic by a leading bearing manufacturer.

The first part of the chart takes up the dismantling of the engine and divides the procedure into 10 clearly defined steps for efficiency and speed. Main bearing installation is outlined in 14 steps with detailed photographs. Other practices discussed include connecting rod and rod bearing installation. A table of recommended crankshaft end clearances is listed, as is a table of recommended oil clearances for various types of connecting rod bearings.

Copies of this chart are limited, so insure a prompt delivery of your copy by writing L12 on the postcard.

A selected list of the latest in literature—books, pamphlets, catalogs — chosen to help fleet operators solve maintenance and operating problems. Use free postcard

## L13. Spark Plug Guide

A handy spark plug type indicator together with an 18-page, pocket size data book, has been made available to the shop man and fleet operator. The indicator is a cardboard folder completely arranged for the pocket. On it are pictured nine conditions of spark plugs in reference to heat range. By comparing the plug removed from an engine with the photographs on this indicator, a mechanic can determine whether plug is of proper heat range. Then, by referring to the data book as directed under each condition, he can determine the cause of the spark plug failure. One side of the indicator is devoted to recommended spark plug gap settings for nearly all makes of vehicles.

A wealth of information is crammed into this little booklet. The indicator and data book in a convenient folder will be sent to anyone writing L13 on the free postcard.

## L14. Welding Booklet

"It is the purpose of this article," says the author of this 12-page booklet, "to review for garages and welding shops the many money-saving applications of welding in repairing automotive parts."

Several types of welding are discussed in detail in the illustrated booklet with special emphasis on correct procedures for each kind of metal. Included in the list of instructions are: bronze welding, steel welding (on high-strength parts as well as sheet steel), aluminum welding, lead welding, soldering, and hard-facing. Each step is clearly explained, and many photographs show just how the preparation and welding should be done.

Included also is a comprehensive chart listing over 400 automotive parts, their usual metal composition and the recommended procedure for welding.

This 8½ x 11-in. booklet is available to the fleetman and welder for the writing of L14 on the free postcard.

## L15. Valve Service Bulletin

A new service bulletin on Ford valve assembly, valve replacement and valve grinding has been prepared for the service man. This 12-page pocket-size booklet takes up the dismantling of the Ford engine step by step; illustrations show correct removal and assembly procedures. Included are diagrams of the

(TURN TO PAGE 102, PLEASE)

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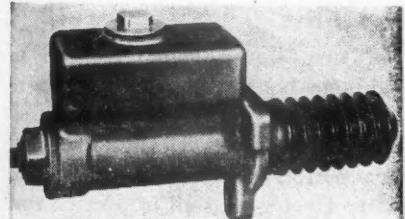
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# new PRODUCTS

The newest in replacement parts, accessories, shop equipment and supplies. For more details of products described or advertised, use the accompanying free postcard

#### P120. Brake Master Cylinder

A new hydraulic master cylinder has been developed by the New York Air Brake Co. for use on light and medium-duty trucks. The unit is a manually operated compound master cylinder which combines the functions of the conventional type master



cylinder and the power brake through the use of two hydraulic pistons. The larger piston performs the initial operation of expanding the brake shoes into contact with the brake drums. A smaller piston becomes operative at a predetermined hydraulic pressure developing sufficiently high pressures to stop loaded trucks without requiring excessive brake pedal control.

This unit is designed to replace booster brakes. It can be mounted easily and conveniently on any make truck and requires no additional space or tubing.

Use Free Postcard For More Details.

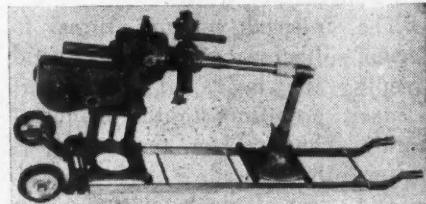
#### P121. Diaphragm Cloth

A specially processed cotton cloth designed for diaphragm use, as in fuel pumps, has been developed by the Irvington Varnish and Insulator Co., Irvington, N. J. The new product is said to have excellent bursting and tearing strengths, to remain flexible and to offer almost instantaneous recovery over a wide range of operating temperatures. Samples will be sent upon request.

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#### P122. Portable Drum Lathe

Barrett Equipment Co., St. Louis, announces a new portable brake drum lathe for use in field service



work, or in locations where time and labor can be conserved by bringing the lathe directly to the job.

The lathe, on an adjustable stand, is mounted on a rubber-tired wheeled track to permit easy handling. When track is placed on the floor, the wheels are raised, giving firm support for the machine.

The outer end of the lathe shaft rests on the adjustable steady-rest or outboard support to prevent off center deflection of the shaft.

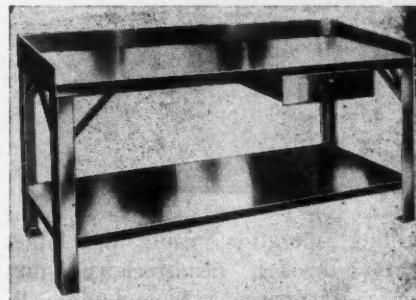
Built on the principle of the internal boring bar, the lathe has a range of swing from 7 in. to 24 in., is equipped with rheostat speed control, operates on any 110-volt a.c. or d.c. outlet and has adequate power to handle the largest brake drums. Because of its flat-on-the-floor design, it is not necessary to remove the tires from the wheels, or lift the wheel assembly from the floor.

Use Free Postcard For More Details.

#### P123. Steel Work Bench

An improved, 12-gage steel work bench has been announced by Equipto, division of Aurora Equipment Co., Aurora, Ill. The bench is suitable for both work bench and table for supporting light machine tools. All four sides of the trays are formed into a boxed edge for rigidity. A second 12-gage plate may be tack-welded to the top for a vise reinforcement.

The bench is available in 42-in. and 6-ft. lengths. It is 34 in. high



and 28 in. deep. It is available now without priority rating.

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(TURN TO NEXT PAGE, PLEASE)

# NEW PRODUCTS

(Continued from Page 59)

## USE THE POSTCARD

BETWEEN PAGES  
58 AND 59

### P124. Torque Screw Driver

A new torque screw driver is announced by the Apco Mossberg Co., Attleboro, Mass. It is used for hand-assembly work on sheet metal, plastics and light metals.

In-lb. on the new driver are indicated directly on the dial, without the use of springs, measuring tension through the use of parallel steel bars of a known tensile strength. The range is from 0 to 25 in.-lb.



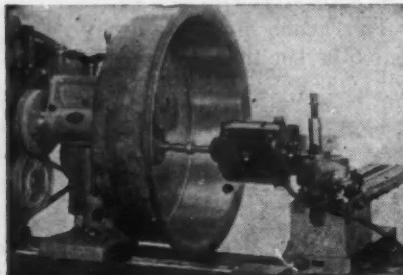
This torque driver comes with two bits, one for Phillips screws and one for slotted screws, together with an adapter for a 1/4-in. square socket to take wrenches for small nuts, studs and socket screws.

Use Free Postcard For More Details.

### P125. Lathe Milling Attachment

A new type lathe attachment has been developed by the Globe Products Mfg. Co., Los Angeles. With this attachment the swing of an 11-in. lathe can be increased up to 19 1/2 in., large enough to true a good-sized brake drum.

This attachment, called the Globe Miller, can perform practically any



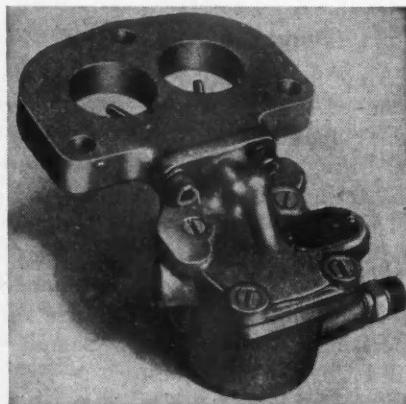
milling operation, using the lathe motor through headstock as the source of power, and employing all the speeds and feeds of the lathe. When not in use, the attachment can be stored away beneath the lathe.

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### P126. Alcohol-Water Injector

Thompson Products, Inc., Cleveland, Ohio, has announced that the alcohol-water injector which it has been manufacturing for aviation military use now is available for all types automotive vehicles. The company states that the device has been designed to give cars and trucks the same extra bursts of power through alcohol-water injection that water injection gave to airplane engines on the fighting fronts.

The Vitameter is attached to the carburetor flange and fed from an auxiliary tank located under the engine hood. It automatically meters a alcohol-water cooling mixture into



the fuel charge, but only when extra power is needed. This is approximately 2 per cent of the operating time of a passenger car, and somewhat higher for trucks.

The injected mixture turns to steam, softening carbon deposits and keeping the inside of the engine cleaner, according to the manufacturer. Thus carbon removal costs are greatly reduced.

The effect of the Vitameter on an engine is said to be equivalent to stepping up the gasoline 12 to 15 octane numbers.

The injector device has been manufactured in limited quantity during the past three or four years, but promises greater possibilities in post-war automotive equipment.

Use Free Postcard For More Details.

### P127. Battery Charger

A 6- and 12-gang charger for charging flashlight storage batteries has been developed by the Ideal Commutator Dresser Co., Sycamore, Ill. Any number of rechargeable wet batteries from one to capacity can be put on or taken off as desired. Indicator lamps mounted above the battery show when batteries are charging.



The multiple charger is available for either a.c. or d.c. current, for 115 volt 50-60 cycle or 25 cycle; 230 volt, 50-60 cycle or 25 cycle. Direct current gang chargers are made for 115, 125, 230 and 250-volt lines.

Use Free Postcard For More Details.

### P128. Fuel Tank Rust Preventive

A new liquid chemical used to eliminate condensation in the gasoline supply system has been developed by the Cristy Drygas Products, Inc., Worcester, Mass. The chemical, Cristy Drygas, is said to prevent rust from forming in the gasoline tank and supply lines.

The product is said to require no additional equipment, and it is easy to use. One pint poured into the gasoline tank to 20 gal. or less of gasoline is all that is required for up to 300 miles of driving.

Use Free Postcard For More Details.

### P129. Improved Hub Puller

A new hub puller has been developed by the Owatonna Tool Co., Owatonna, Minn. This tool, OTC No. 827, is equipped with three sliding arms which are readily adjustable and adaptable to any hub where the hub bolt circle does not exceed 7 1/2 in.

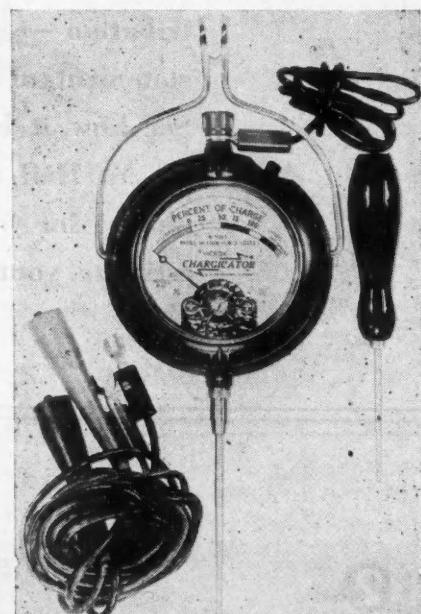
paint can be obtained from one gallon of the concentration when mixed with gasoline.

Uses for the new paint include application to tires after repairs or recapping to restore original "factory finish," and use after wash or wax jobs to touch up the tires. Floor boards and running board matting are also improved in appearance and given longer life by application of the paint.

**Use Free Postcard For More Details.**

#### P132. Battery Voltmeter

The newly developed Hickok Chargicator indicates electrically the equivalent gravity of any lead-acid storage battery, places no load on the battery and is said to be quick, clean and reliable.



The Chargicator gives instantaneous measurement of battery condition. It shows what charging rate to use, either for trickle charging or for an efficient, safe, high-rate charge. It indicates the percentage of charge and charging danger and warns instantly of destructive overcharging. Manufactured by the Hickok Electrical Instrument Co., Cleveland, Ohio.

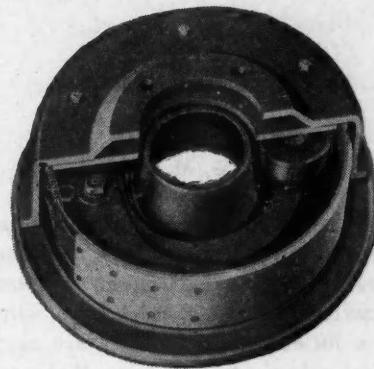
**Use Free Postcard For More Details.**

#### P131. Tire Preserving Paint

A new black tire paint, marketed in one or five gallon cans is announced by The B. F. Goodrich Co., Akron, Ohio. Up to nine gallons of

less control, instantaneous action and perfect equalization.

Maximum current necessary at temperatures of 70 deg. is 2.2 amp. at 6 volts. The maximum current required for four brakes (8.8 amp.) is less than required to operate a vehicle lighting system.

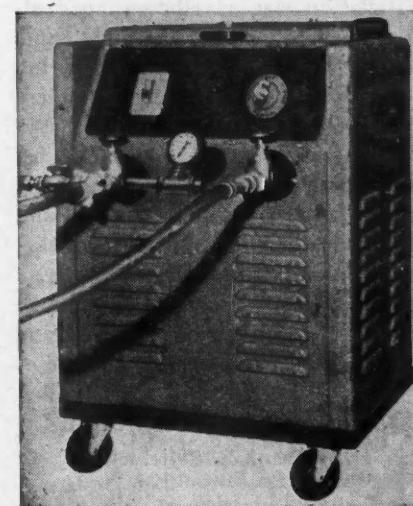


The Empire Hylek is a compression type controller utilizing a carbon pile resistance to provide smooth, stepless flow of current. The control unit may be mounted either on the steering column for hand operation or on the engine side of the dash panel. It can be connected easily to the towing vehicle hydraulic brake lines, permitting foot operation of the trailer brakes.

**Use Free Postcard For More Details.**

#### P134. Circulator and Cleaner

The Moguloid Co. of America, Chicago, Ill., has announced the development of the new Moguloid M-500 Circulator for use in cracked



block repair. This new unit in one operation circulates heated Moguloid Solution through the block under pressure and at the same time cleans out all rust and foreign matter. The

(TURN TO PAGE 166, PLEASE)

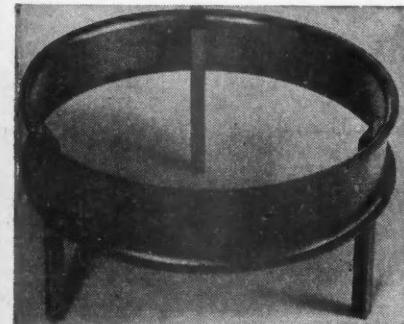
This Universal hub puller is said to exert a straight, powerful force that will remove the most stubborn wheel hub without damage to the wheel lugs.

**Use Free Postcard For More Details.**

#### P130. Tire Removal Stand

A simple stand for removing truck tires from rims has been developed by Goodyear Tire and Rubber Co. The demounting stand, marketed by Wheel and Rim Sales of Toledo, Ohio, consists of a 20-in. spacer rim band and three pieces of angle iron or 1-in. stock bolted to it for legs. A cut-out on the rim band allows for valve clearance when mounting the tire.

The tire and rim are first placed on the demounting stand with the lock ring resting on the spacer band and the valve over the valve slot. With the bead-set normal, blows spaced at 1-ft. intervals around the tire will dislodge it. If the rim is rusted, a driving iron is recommended to loosen the beads.



Only the 20-in. stand is available for immediate delivery. The 18-in. and the 24-in. are available on order.

**Use Free Postcard For More Details.**

#### P133. Electric Trailer Brake

A new Hylek Controller and Magdraulic Electric Brake has been developed for trailers by the Empire Electric Brake Co., Newark, N. J. The brake is said to provide effort-

# SHOP & SALVAGE HINTS

## 1. Mounting Bolt Lock

by W. M. Heil  
Gulf Refining Co., Louisville, Ky.

When removing or installing nearly any generator, it is necessary to use two wrenches—in a place that is hard to get at. I have found it a lot easier if the bolts are made to hold themselves so that one wrench will do the job.

A small piece of metal or rod welded across the head of the mounting bolt will keep it from turning when removing or installing the generator. Usually a 1-in. piece of metal is sufficient.

## 2. Redesigned Bumper

by J. M. Kavanagh  
Fleet Supt., Hegeman Farms Corp.,  
Ridgewood, N. Y.

Due to excessive repairs we were forced to redesign a rear bumper and step installation on a popular make delivery truck body. We have found the newer design very rugged and far superior to the factory job.

The original rear bumper and step installation was an elbow-shaped affair that was weak at the right-angle bends. They were continually being bent down or breaking at these points.

We welded a piece of U channel along the bottom rail of the frame, drilled two  $\frac{1}{2}$ -in. holes in it and mounted a strong straight bracket for the bumper brace and step.

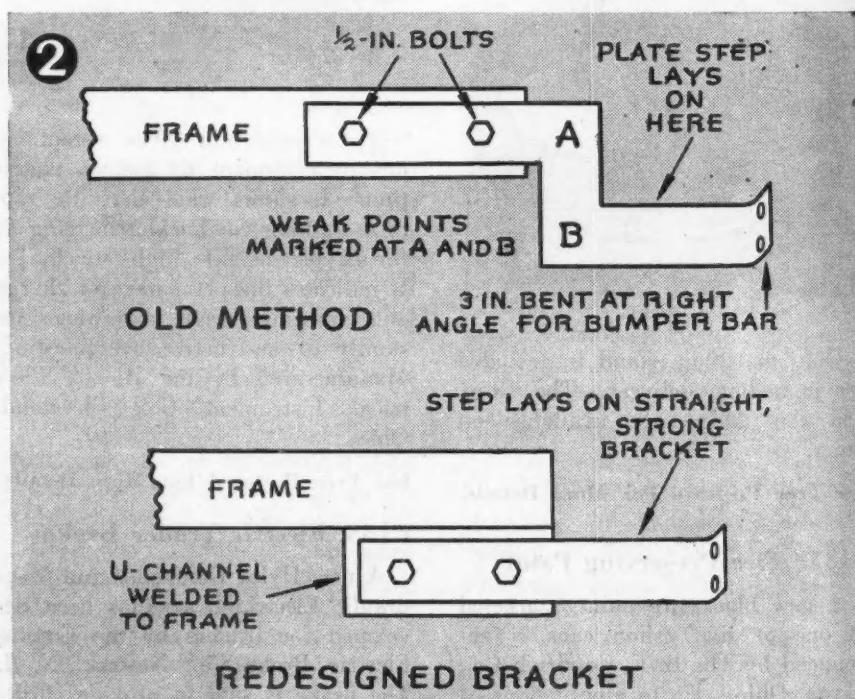
This change does not take long to make and eliminates those sagging and broken rear bumpers and steps.

## 3. Improved Horn Button

by Frank E. Seftchick  
Swift & Co., Brooklyn, N. J.

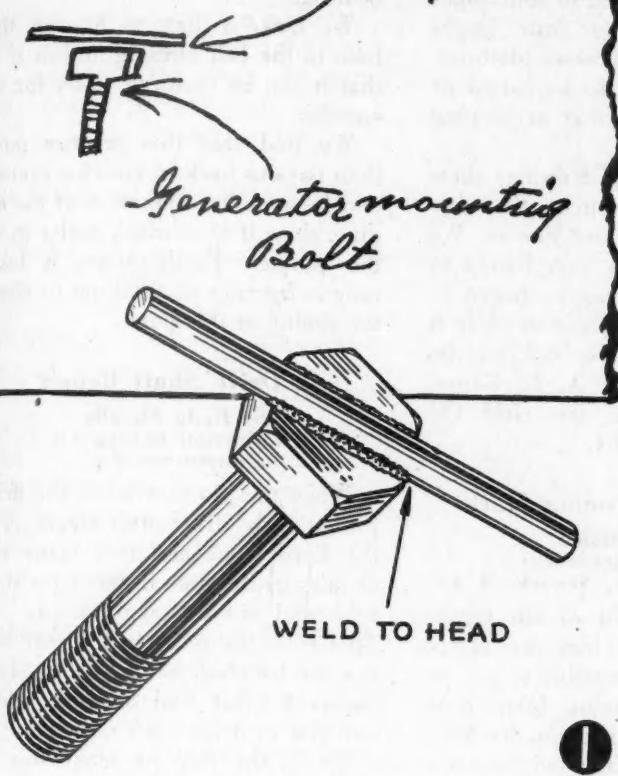
On trucks having the horn wire running through the steering shaft, the wires short many times, and the horn blows when the wheel is turned. Again, the horn button itself becomes defective and needs replacement.

Commercial Car Journal will pay \$5 for acceptable shop hints and \$5 for parts salvage tips. A snapshot or a rough drawing with a simple explanation is all that is needed. CCJ will polish them for publication. Send one in today! Illustrated at right is a typical contribution — just a rough sketch and a brief statement of the problem and its solution. See how it looks in Fig. 1. This brought W. M. Heil \$5. There are other \$5 bills waiting for your contribution. Don't underestimate your ideas. Let the editor judge.

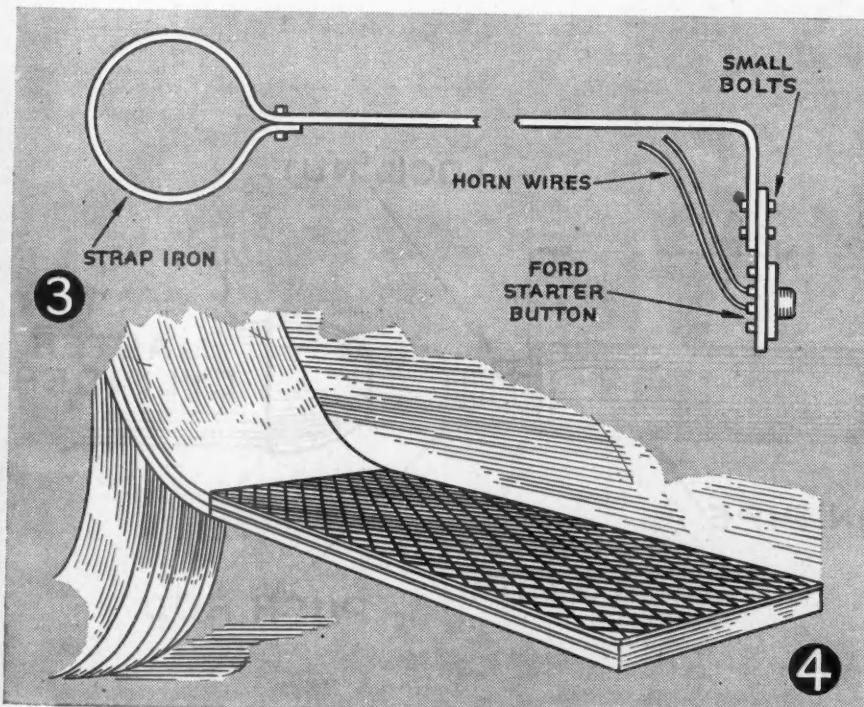


be glad to hear of  
& usually a one inch  
sufficient.

*Weld Strip here*



1



3

4

Rather than replace all this, especially now when parts are hard to get, we fasten a Ford dash starter button to the steering column as shown in the diagram and wire it directly. This starter button has large contacts and makes an excellent horn button.

#### 4. Safety Running Boards

by V. N. Leavitt  
Lake County Road Commission,  
Baldwin, Mich.

Steel running boards that get slippery in rainy and freezing weather can be slip-proofed very easily, and dangerous falls can be averted. This is done by welding a sheet of  $\frac{3}{4}$  in.—No. 10 industrial mesh to the step. Regular metal lath as used in building construction will also do the job.

The mesh or lath is simply cut in desired dimensions to fit the running board and welded to the steel at the four corners. Treated in this manner, the boards will have a safe anti-skid surface.

#### 5. Clevis Extension

by Frank E. Seftchick  
Swift & Co., Brooklyn, N. J.

Here is a home-made clevis extension that we have found handy in several places on our trucks. For instance, on the 1941 Chevrolet truck, the early model used a  $2\frac{1}{2}$ -in. clevis on the master cylinder push rod. When the brakes were applied, the push rod would bend. Result, no brakes.

The extension we made has worked well. It is made from a  $\frac{1}{2}$ -in. pipe 3 in. long. To one end is welded the original  $2\frac{1}{2}$ -in. clevis. On the other end of the pipe is welded the push rod lock nut, and the push rod is turned into the pipe to the length desired.

This device strengthens the push rod, keeps it from bending on brake application and gives it the proper length for attachment to the master cylinder. This idea can be used on other trucks when brake rods strip the threads and pull out of the clevis.

#### 6. Home-Made Wrench

by Preston Coleman  
Rainey Wood Coke Co.,  
Norristown, Pa.

We made a special socket wrench which we use to tighten inlet and outlet oil pipe connections on Dempster dump units mounted on the truck chassis. The wrench is just as handy

(TURN TO NEXT PAGE, PLEASE)

# SHOP & SALVAGE

(Continued from Page 63)

for other out-of-the-way places where the conventional wrench is hard to use.

The wrench is made from a piece of  $\frac{3}{8}$ -in. steel plate and is cut with a cutting torch to the size desired. In our case we use a hex shape with one side cut out as shown in the drawing.

A worn out or discarded  $\frac{1}{2}$ -in. socket is welded to the flat side of the plate so that a regular extension can be inserted for the handle.

This wrench is handy to use and saves barking knuckles in many places about a truck.

## 7. Wheeled Jack

by F. M. Britain  
Division Supt. of Motor Equipment  
Gulf Oil Corp., Houston, Tex.

For a number of years we have used in our shop a small wheeled jack for handling transmissions, rear axle housings and other heavy parts

which was made from a screw jack mounted on a steel frame.

The unit has a platform on top shaped to fit the part to be lifted and is mounted on castors so that it is easily moved about the shop. The top platform is welded to four pipes which telescope into four larger pipes welded to the bottom platform. This allows the top to be raised or lowered without shifting or turning over.

The accompanying drawings show details of construction so that any mechanic can make one like it. We have found this jack very handy in the shop, as a part can be raised or lowered and held in position while it is being assembled. The jack was designed and built by A. E. Guinn, truck inspector for the Gulf Oil Corp. in Houston, Tex.

## 8. Relocating Timing Marks

by Jean Babin  
Shop Superintendent  
Columbian Laundry, Newark, N. J.

We find that most of our trucks have flywheel markings in places that are almost impossible to get at, let alone get a timing lamp near enough to see the markings. We have found that it is a good practice whenever we have a truck down for a clutch or transmission job, to change the timing marks on the flywheel.

First we cut a 2-in. hole in the top

of the bell housing. Then we set the flywheel on the right timing readings and drill a  $\frac{3}{16}$ -in. hole in the top of it. We install a ball bearing in this hole and bolt a marker on the bell housing pointing to the ball bearing.

We make a plate to fit over this hole in the bell housing and fit it so that it can be removed easily for inspection.

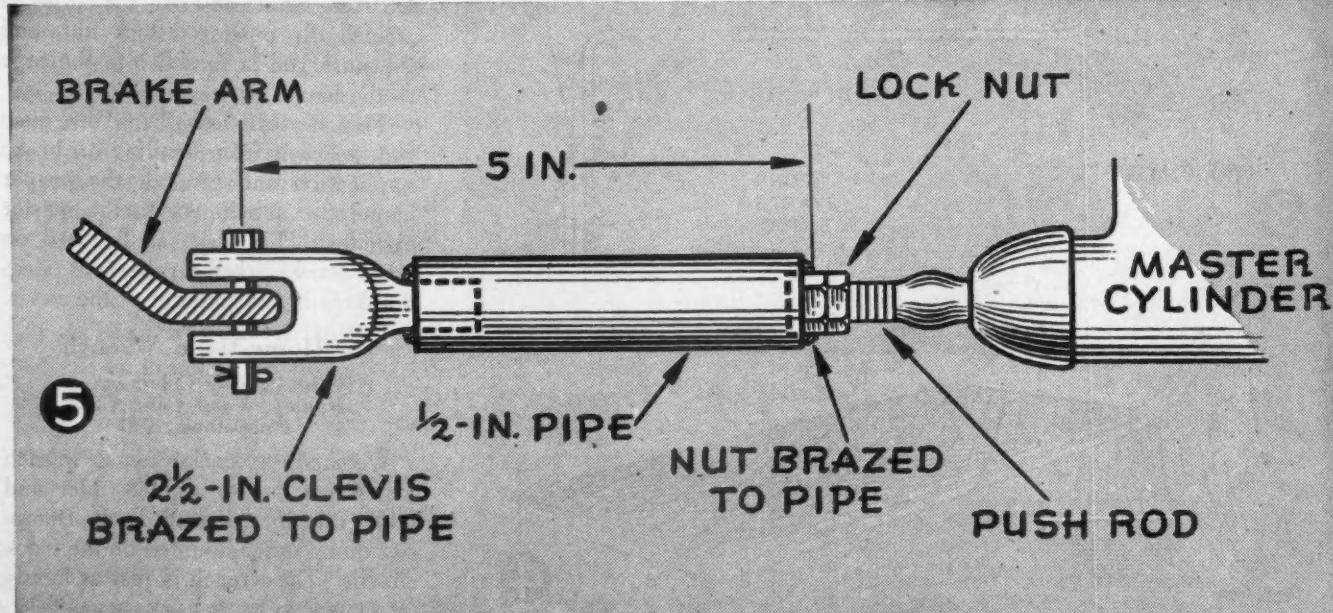
We find that this practice more than pays us back in gasoline savings and in smoother operation of the engine, since it is so much easier to set the timing. Furthermore, it takes only a fraction of the time to check the timing at this point.

## 9. Drive Shaft Repair

by Budd Shaulis  
Continental Baking Co.  
Norristown, Pa.

When the pin that holds the drive pinion to the drive shaft shears off in the Ford truck and car, many mechanics drill a hole in the drive shaft tube and simply take the pin out. This stops the noise in the rear end, but the backlash between the splines causes a great deal of wear, which will end in drive shaft failure.

Here's the way we make this repair. Remove the drive shaft tube and install a new pin in the pinion. Drill a hole 1 in. from the rear flange and tap it for a  $\frac{3}{8}$ -in. pipe plug. Slide the tube back over the



shaft and bolt it in line. Then spot weld the drive pinion to the shaft through this hole—in three places around the shaft. The drive shaft should be turned as this is done so that it will be properly aligned in the tube. Now remove the tube and weld all around the pinion drive shaft.

We repaired our first job  $3\frac{1}{2}$  years ago, and the truck is still going strong. It not only saves money but a lot of labor as well.

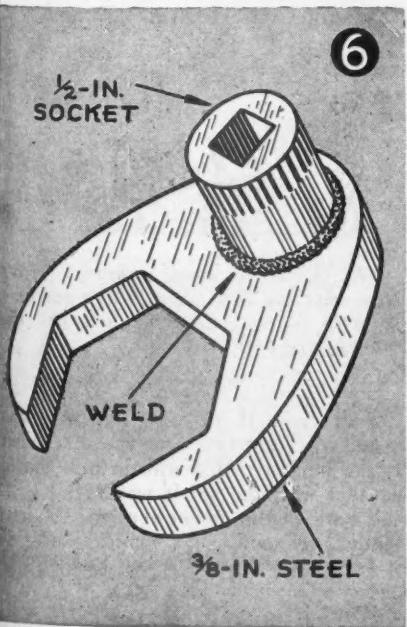
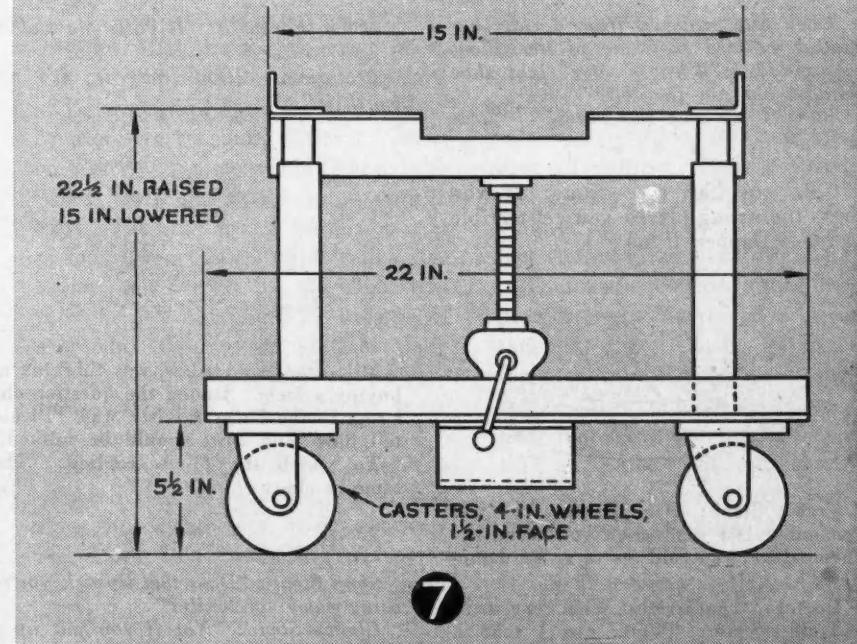
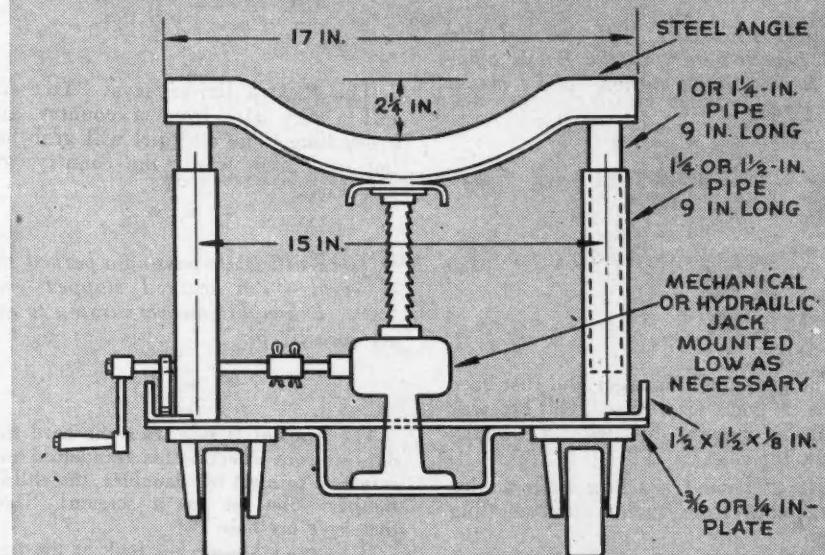
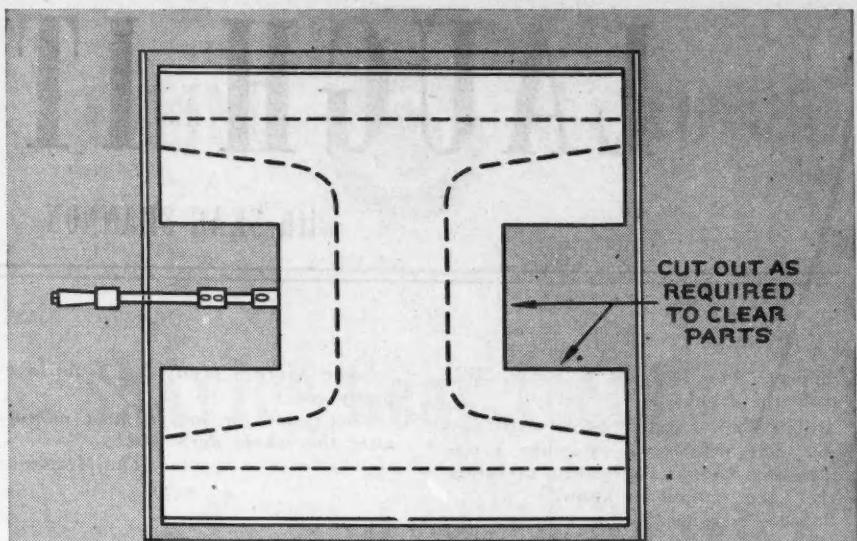
#### 10. Auxiliary Starter Switch

by G. W. Layne  
Brooks Transportation Co.  
Richmond, Va.

Here is a device which will speed repair work and save a lot of trouble when a mechanic is installing a set of bearings, taking up connecting rods or installing a new crankshaft pulley.

With this hand switch a mechanic can turn the engine to any position without leaving his creeper. This device is made from a dimmer switch. Heavy, insulated wires as long as necessary are fastened to the posts of the switch. Clips are attached to the ends of these wires. These can be easily clamped to the starter or starter switch so that the auxiliary switch will hang underneath the truck where it can be reached easily by the mechanic.

We use this device when working on such jobs and in timing the spark and find it worth its weight in gold.



# LAUGH IT OFF

with SKAG SHANNON

**Super:** "You look all in today, Bill; what's the trouble?"

**Bill:** "Well, I didn't get in until daylight. The wife woke up when I was undressing. 'Aren't you getting up rather early?' she wanted to know."

**Super:** "So what?"

**Bill:** "In order to avoid trouble, I just put my clothes back on and came down to the job."

\* \* \*

**Information Girl:** "Of course I told that new secretary in the Boss's office she looked like a million—and I meant every year of it."

\* \* \*



The personnel manager had just been given a good size raise. On his way home he bought his wife a swanky skunk fur coat.

**Wife:** "I can't see how such a nice coat comes from such a foul-smelling beast."

**P. M.:** "Well, I didn't expect thanks, but may I demand respect?"

\* \* \*

**When Sue returned from a ride,** her mother noticed that one of her shoes was muddy. "Why is your right shoe muddy, but not the left?"

**Sue:** "I changed my mind."

\* \* \*

Gals are like typewriters: If you press the wrong places, you get terrible words. (Dapper P.A.)

\* \* \*



**Traffic Steno:** "Oh, Doctor, do you remember last year when you cured my rheumatism, you told me to avoid dampness?"

**Doctor:** "That's right. What's wrong?"

**Traffic Steno:** "Well, can I take a bath now?"

**Some adore a pretty leg, some love a pretty curl;**

**That's not for me, I must admit, I want the whole darn girl!**

(The Motormac)

\* \* \*



The Pickup Driver says: "You can tell a city girl from a country girl every time. The city girl will grab her hat in a high wind; the country girl her skirts."

\* \* \*

**Overheard while passing a parked car at night:** "I'm sorry I slapped you, Steve. I thought you were trying to get my sorority pin."

\* \* \*

The Ancient Driver from the hard tire days was out wheeling his grandchild and returned to meet his daughter, the child's mother. She let out a scream: "Dad, that isn't my baby?"

"I know, I know—but look at the fine rubber-tired buggy."

\* \* \*

**Mech. Foreman:** "It costs me \$5,000 a year to live."

**Motormac:** "Don't pay it; it's not worth it."

\* \* \*



Mike, the car washer, was thinking of buying a farm. Among the questions he wrote to the Farm Adviser was: "Please tell how long cows should be milked."

To which the F. A. replied: "The same as short cows."

\* \* \*

**Shop Steno:** "Does that lipstick you're using come off easily?"

**Claims Steno:** "Not if you put up a good fight."

Bessie, from the Claim Desk and on vacation meets an ex-pal at the resort. "My, the five years since we worked together has done unkind things to you, darling."

**Ex-Pal:** "Really, my dear. I don't think I would have recognized you at all—if it hadn't been for that coat!"

\* \* \*

Mack, the veteran driver with ABC Transport, hit a Ford coupe head on. He pulled the driver out, then quickly got a flask out of the back seat cushion. "Here, drink this, it'll do you good."

"Thanks," said the fellow; "I left snort for you."

"Now, you don't," said Mack, "I'll take mine after the cops have been here."

\* \* \*

**The Vice-President was back from the ATA Convention:** "It was a little difficult getting a room at the hotel—but I insisted and got one. I won't tell you which floor it was on, but instead of a key the clerk handed me a nickel."

\* \* \*

Roadside Hasher: "Will you have red beans or white beans?"

Hungry Driver: "Neither."

Roadside Hasher: "In that case, dinner is over."

\* \* \*

**SIGN IN THE POWDER ROOM XYZ TRANSPORT: "IS THIS TRIP REALLY NECESSARY?"**

\* \* \*



**The Office Boy wants to know:** "If it's true what the Boss says, 'We're put here to help others,' what in hell are the others here for?"

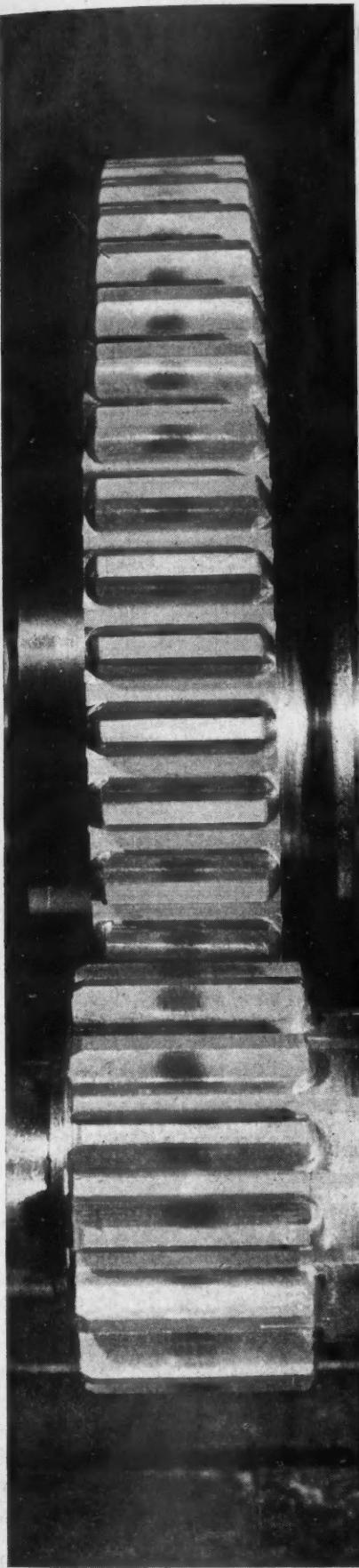
\* \* \*

And then there was the son who asked his Fleet Operator father: "What is the person called who brings you in contact with the spirit world?"

To which the father replied: "A bartender, my son."

\* \* \*

(RESUME WORK)



EYEING  the FUTURE

## Shaving Gear Teeth to End "End Bearing"

"Crown shaving," a new gear cutting step,  
not only eliminates end bearing troubles  
but insures better and quieter operation

by JOSEPH GESCHELIN  
Commercial Car Journal, Detroit Technical Editor

**G**EAR boxes for motor trucks have come a long way in recent years. Many of the troubles that have plagued fleetmen were taken into the laboratories and engineering departments, studied by the experts and, little by little, corrected to the point where the worst of the headaches no longer exist. The interesting thing about it is many gear boxes built today are either small editions of what was thought necessary before—by way of size and weight—or if they look about the same size, you can be sure they will take considerably more punishment.

Knowing what we know now, it is realized that a heavy-duty gear box does not need big, wide gears to stand up. In fact, the big wide ones didn't stand up under severe punishment due to overloading. There have been several important reasons for

gear failures under unusual loading conditions. From the standpoint of strength alone, i.e., sheer load-carrying ability, there would have been no failures if it had been possible to make sure that gear teeth were meshing properly and had the right area of contact. It is realized now that merely because the gear tooth is wide is no assurance of enough contact to carry the load safely.

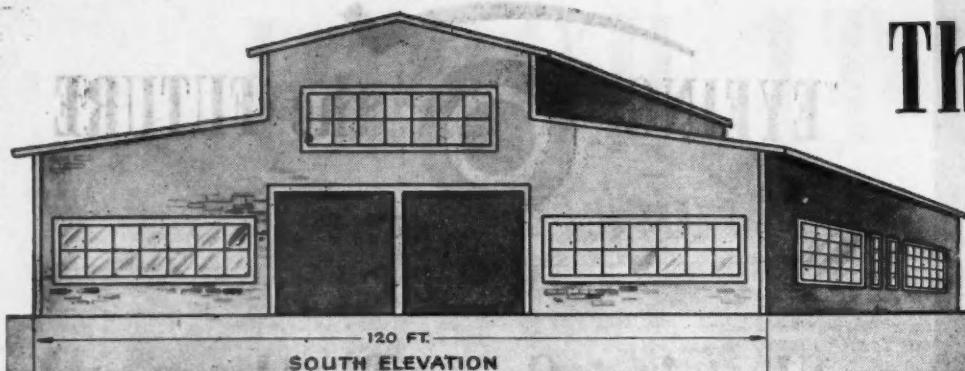
This fact focused attention upon even greater control of accuracy in the gear box. Closer tolerances on the machining of the case and spacing of shaft centers, better control of gear blank dimensions and gear cutting and heat treatment, better control at assembly, to get the right combinations of parts and of backlash.

The best alloy steels and the most perfect heat treatment that man

(TURN TO PAGE 148, PLEASE)

Close-up of spur tooth transmission gears under test for mating. Area of contact (dark areas) is in tooth center

# Three Plans for



Above: Drawing of south-east elevation of shop at right. Plan 1 provides for convenient service area with lube pits in addition to repair pits. Area, 10,800 sq. ft.

## AN EFFICIENT SHOP ... IN THREE SIZES

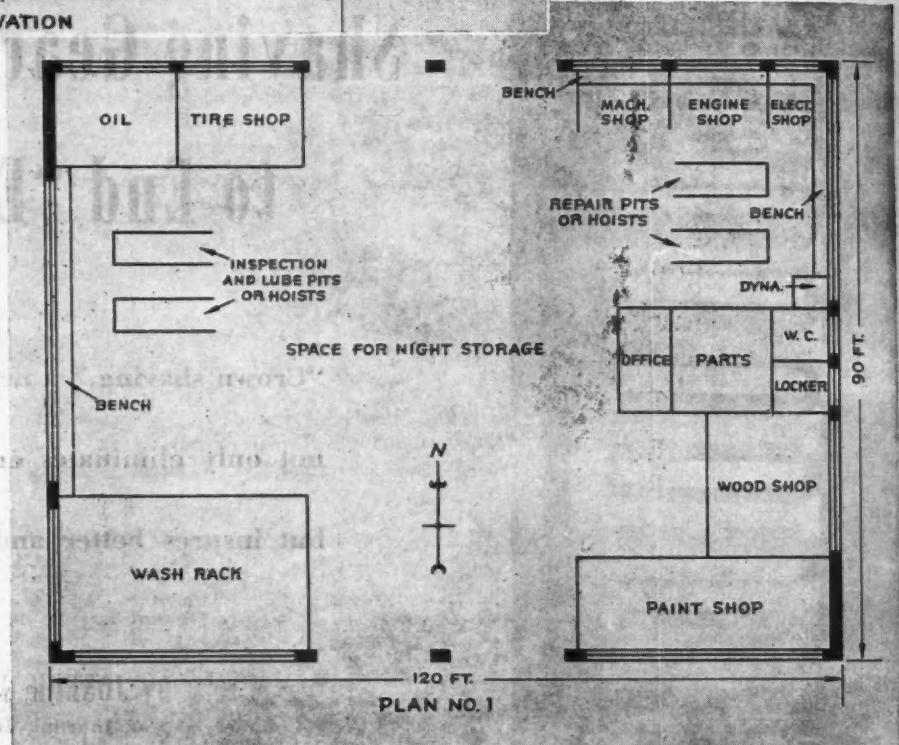
A progressive eastern fleet operator wrote: "We are looking around for floor plans for a repair garage to handle from eight to 12 tractors or large van-bodied trucks, and wonder if you can send us some suggestions in layout for the following: Stockroom, electrical repair department, machine shop, dynamometer, work benches, locker room, garage office, woodworking shop, paint shop, grease rack, wash rack, tire service."

Some essential facts were missing, but the final result gives him three choices — mostly a matter of size. The arrangements have many good points and with a little more imagination they can be nicely adapted for larger fleet requirements.

**T**Hese plans and the story are because of a letter received by the editor of COMMERCIAL CAR JOURNAL from a progressive fleet operator in the eastern United States. Here's what he said:

"We are looking around for floor plans for a repair garage to handle from eight to 12 tractors or large van-bodied trucks, and wonder if you can send us some suggestions in layout for the following:

"Location of: Stockroom, electrical repair depart-



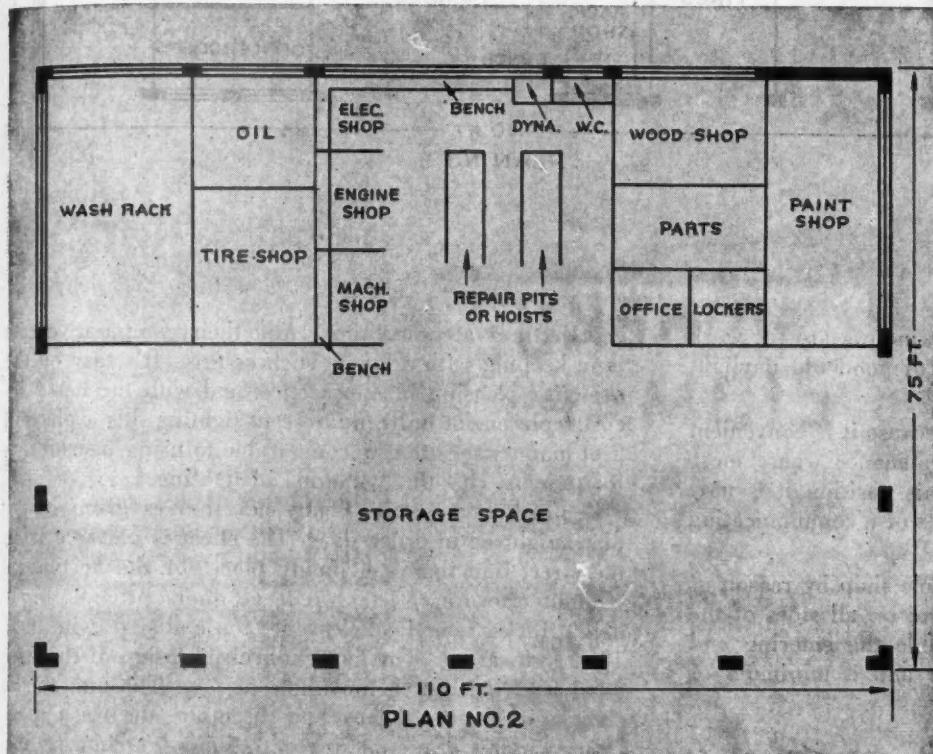
**Prepared for a fleet of eight to 12 trucks, these plans provide efficient arrangement of 12 items from wash rack to garage office that can serve as pattern for larger fleets**

ment, machine shop, dynamometer, work benches, locker room, garage office, woodworking shop, paint shop, grease rack, wash rack, tire service."

Obviously, this fleetman knows what he wants, and further, he wants a modern shop with a planned layout that will provide a fleet of his size and type with the utmost in maintenance facilities for all-out good over-the-road service. But, regardless of his description of his needs, he did fail to say if the shop was to include stor-

# Plans for a 12-TRUCK Shop

by HARRY L. ROGERS



Plan 2, 8250 sq. ft. in area, is a more compact arrangement of service and truck storage

age space also. Well, it's a poor job that doesn't call for a little imagination. So, we've decided to work up a complete floor plan for spacious maintenance with ample storage space, Plan No. 1, which includes building and elevation; a "tighter" floor plan, with storage, Plan No. 2; and a compact, shop only sketch, Plan No. 3. This, so others beside our friendly inquirer may, we hope, get something out of the various layouts, too.

## Plan 1—Total Area 10,800 Sq. Ft.

**PLAN NO. 1**—In this layout accessibility and elbow-room is built right into it. Also, we have grouped maintenance—electric, engine and machine shops, with their work benches and tools—right around the two pits. On the same side, or bay, in opposite corner there are the woodworking and paint shops. Across, in the opposite bay, one corner is occupied with the tire shop, the oil storage and the lube and inspection pits, which also have good long work benches. In the last corner the washrack is given a by-itself-place with plenty of room for good all-around job of cleaning.

Observation has indicated that the fleet superintendent's office is, in general, given little consideration when

it comes to placing it where he has an overall view of the shop, and at the same time, little attention is paid to his comfort while attending to the many trying details in his "den." In this layout the location of the office was selected for its central position, its closeness to the adjacent stockroom, and with an idea of having it all-glass sided. Then, when that busy man is not hot-footing it around the terminal, he can run the "paper end" with both eyes, at times, on the smooth shop layout that is his pride and joy. Because where

will you find a fleet superintendent that doesn't cherish a well-planned shop that has the fewest possible "dead-ends?"

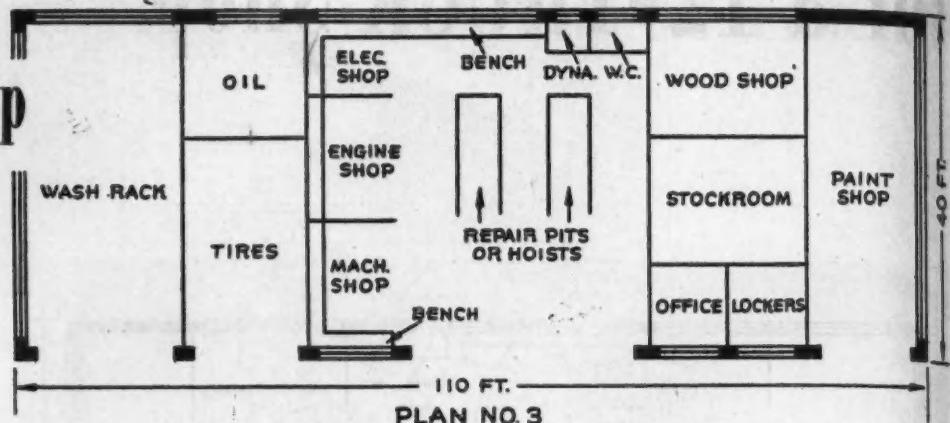
A FEW minor but important shop points are the positioning of the electrical, engine and machine shops. The electrical shop was deliberately placed in the corner because plenty of light is necessary for the precision job of overhauling and adjusting electrical automotive apparatus. And, also, because mobile testing instruments can be run out along the pit heads without jockeying them around too many obstructions. Then, because our friend requested a spot for his dynamometer we have put a neat enclosed space at the opposite corner for this important instrument. This instrument has the same free access to the pit heads as does the electrical shop. And, also, it can be run out into the main body of the shop for use on any vehicle standing in center or opposite section of shop.

The engine and machine shops have been placed next each other because they are practically part of the same activity. Good natural lighting is provided with full

(TURN TO NEXT PAGE, PLEASE)

# 12-TRUCK Shop

Plan 3, 4400 sq. ft. in area, is similar to Plan 2 but without the truck storage space



(Continued from page 71)

width windows and beneath these windows are the work benches where the best advantage of good old daylight can be taken by the mechanic.

The toilet is placed where it is because it is convenient to both office, the mechanical maintenance where most persons will be working, and in this position it is next to locker room with access by means of a communicating door.

Ample daylight can enter the whole shop by reason of the large, deep windows that abound on all sides of the building. Large doors make possible the entering and leaving of the shop with dispatch and a minimum of confusion or delay.

### Seasonal Comfort Considered

**I**N THIS 90 x 120-ft. fleet garage and shop, there's the matter of providing comfort with the seasonal changes—high temperatures and humidity in the summer months, and the cold and wet of the winter and its fringe months. First, the summer: for these months the design of the building is intended to provide plenty of air space with good ventilation through the windows along the sides of the high center section and through the end windows. The rising hot air is quickly dissipated through these opening and with the end doors opened, the circulation of fresh air should be greatly stimulated to the great satisfaction of all concerned.

For the cold and wet months, what about putting grids beneath the two bay floors or underneath the entire floor area, center section and all. For the general comfort and welfare of every shop employee, this method of heating with circulating hot water through floor-concealed piping is second to none. And the overall distribution of controlled heat is a barrier to loss of time through colds and other more serious illness due to exposure and drafty floors. If only speedup work and cutting down of loss time by absenteeism due to sickness amounted to a saving to the operator of \$10 a day, that is \$3,650 annually; about the cost of the heating system complete, and may be a buck or two left over for merit badges for "no time out."

And lighting; that's important. In the bays, fluores-

cent fixtures are the thing. And their comparative cost is in keeping with a layout such as this. It's easy on the eyes, it's pleasing in appearance, and with the new low-cost replacement units, fluorescent lighting fills a place in fleet maintenance that is comparable to using instruments for tune-up. It's the "vitamin" of lighting.

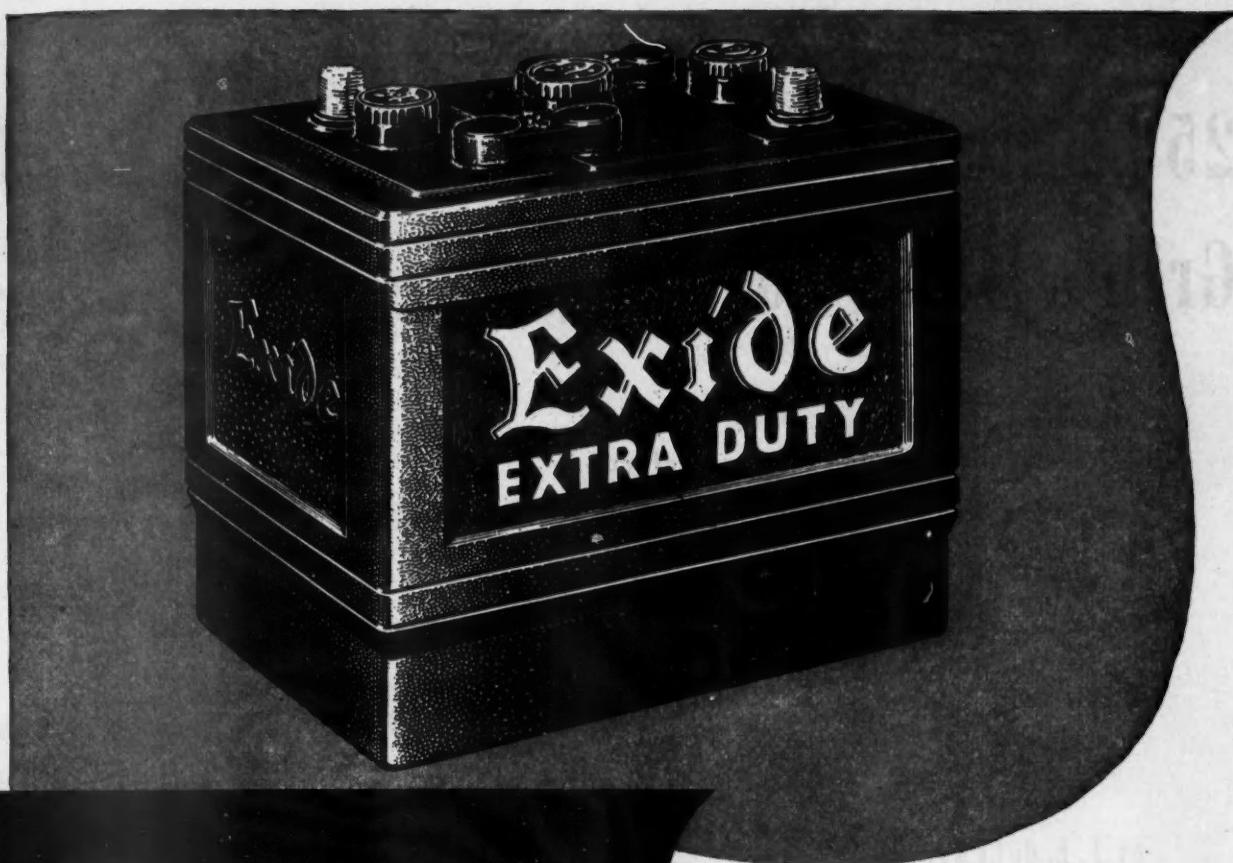
A quick look at the South elevation as given in the plan might be in order now. The effect is pleasing from the street and there's a dandy place for the fleet name without crowding. The two large doors provide ample height for extreme load clearance top and sides with their 18 x 18-ft. areas. The long, unbroken design of the windows lend balance to the whole design. The one on the right is of the paint shop and the other, the wash rack. Other window design is a matter of owner's choice. But, anyway, it is looked at. The building is flexible both inside and out and lends itself easily to many different layout arrangements.

### Plan 2—Total Area 8250 Sq. Ft.

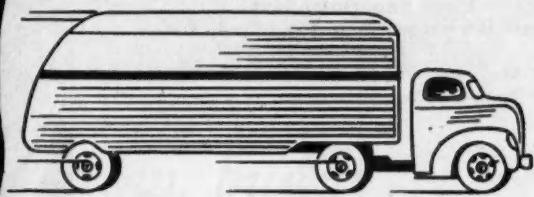
**P**LАН NO. 2: Here's a 75 x 110-ft. fleet shop and storage garage that can be checked at a glance. It has the facilities of Plan No. 1, but is "tighter" in layout; using less space yet allowing good distribution of working facilities and an abundance of good ventilation because of its many doors—all one side and half of each end. The slight change in the location of the various departments and the fleet office does not stifle any of the shop's flexibility. It appealed to the writer as an attractive and handy arrangement for the particular operator.

### Plan 3—Total Area 4400 Sq. Ft.

**P**LАН NO. 3: This is simply Plan No. 2 with half the floor space, or a little better, and just a shop; no storage space at all. It's the answer to the demand for economy; like getting a suit with a collarless coat and no vest—just the essentials. If you like it that way, here it is. It's got everything but the storage area. With the front elevation equipped with out-of-the-way doors, it's an open shop in the summer and with the doors closed, it's tight and compact. You can go modern in any of the three; here's hoping.



**LESS PER MILE IN COST  
MORE PER MILE IN SERVICE**



Storage battery records, gathered from widespread experience on all battle fronts and on all types of automotive equipment, supply added evidence of Exide ruggedness, dependability and long-life.

The lessons learned from this experience, combined with Exide engineering and manufacturing skill, are your assurance that Exide will continue to hold front position as the world's finest and most

economical motor truck battery.

If you have a special battery problem, write to Exide.

**WHEN YOU BUY  
AN EXIDE YOU  
BUY TO LAST**



**Exide**  
**EXTRA DUTY**  
**BATTERIES**

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

# 250-Mile Oil Changes & Grille Covers Cut Sludge

Crankcase condition and engine performance improved; bearing failures drop.  
Re-refining offsets cost of oil changes

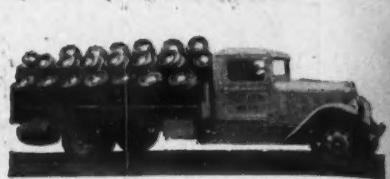
by E. L. de CURTONI

Fleet Superintendent  
Acme Breweries, San Francisco, Cal.

WE ARE rather pleased over one of our recently perfected plans for improving engine operation of our truck fleet. It relates to increasing engine temperatures to do away with crankcase dilution and resulting con-rod bearing trouble.

Mainly because of the poor grade of wartime gasoline we have had con-rod bearing trouble. The fuel wasn't being burned. Half of it went into the crankcase. Oil pump pressure fell off. On many of our trucks, the bearings were sticking.

We did everything we could think of to combat this condition, for it was getting serious. Gasoline mileage in the "good old days" had been around six miles to the gallon. Finally, it went down to about four miles per gallon, a drop of about one-third. We had been changing our oil every 500 miles, or about once in every two months. We began to change the oil every 15 days, thus keeping the oil in use only about one-fourth of the time and distance we had been doing. We also made sure that the thermostats were working properly, in order to keep the engines at the



## 60% IMPROVEMENT

"We had been changing oil every 500 miles . . . Now we change the oil on all trucks once a month regardless of mileage."

"We have installed pull-back springs on the choke rods . . . to offset to a great degree the decrease in octane ratings of the gasoline."

"In our search for a cure (for crankcase dilution and sludge) we hit upon the idea of using radiator covers—made in the shop—to increase engine temperature."

"This practice . . . along with our new procedure in changing and handling the oil . . . has improved the quality of the crankcase oil at least 60 per cent, as shown by laboratory tests."



Fig. 1. Tailored radiator grille covers are 18 in. wide at top, 15 in. at bottom, 21 in. long. Window can be opened for warm weather operation. A removable flap, 8 x 10 in., is buttoned to the cover with ordinary fasteners

right temperature. But still the trouble was not cured.

Then the con-rod bearings on two of our trucks gave way at the same time, and we saw we had to act at once. These were straight babbitt bearings, and the difficulties were not confined to any certain makes of bearings or truck.

In our search for a cure, we hit upon the idea of using a radiator cover to raise the engine temperature. We

(TURN TO PAGE 132, PLEASE)



©1945 The Studebaker Corporation

## "Truck your load back tomorrow, buddy... traffic's a Chinese puzzle here today"

**Snarled-up streets cost America millions of dollars every year**

If the men who laid out most of our cities were doing the job over right now, we probably would have roomier streets and highways and far less of today's confusion and congestion.

The motor car and the motor truck obviously weren't taken into account—because they didn't exist—when most of our present municipalities started growing up.

Meanwhile, business areas, as well as railroad, steamship and other public transportation terminals have become too solidly situated where they are, in most communities, to warrant drastic changes.

### A way out must be found

Street traffic will grow enormously

with the end of the war, the return of millions of men to civil life and the full-scale resumption of motor car and motor truck manufacturing.

But ways must be found to take care of that increased traffic or some cities will progress while others slow up.

Fortunately, far-sighted men in business and industry, as well as in local, state and federal government, have already accomplished much, at the planning stage.

### Most people want to help

Everyone who uses our city streets, either as motorist, pedestrian or rider of public transportation facilities, knows that congested traffic creates a constant personal problem. It impedes deliveries,

causes time to be lost going to and from work and shopping, not to speak of the accident hazards it creates.

As one of America's pioneers in the field of highway transportation, Studebaker has learned that public insistence is always the most effective spur to improvement in traffic conditions.

It is to help stimulate more widespread interest in the problem at this time that we are publishing this and other advertisements.

# Studebaker

PEACETIME BUILDER OF FINE CARS AND TRUCKS

Wartime builder of Flying Fortress engines—military trucks—Weasel personnel and cargo carriers

For reprints of this advertisement in full color, while the supply lasts, address The Studebaker Corporation, South Bend 27, Indiana, U. S. A.

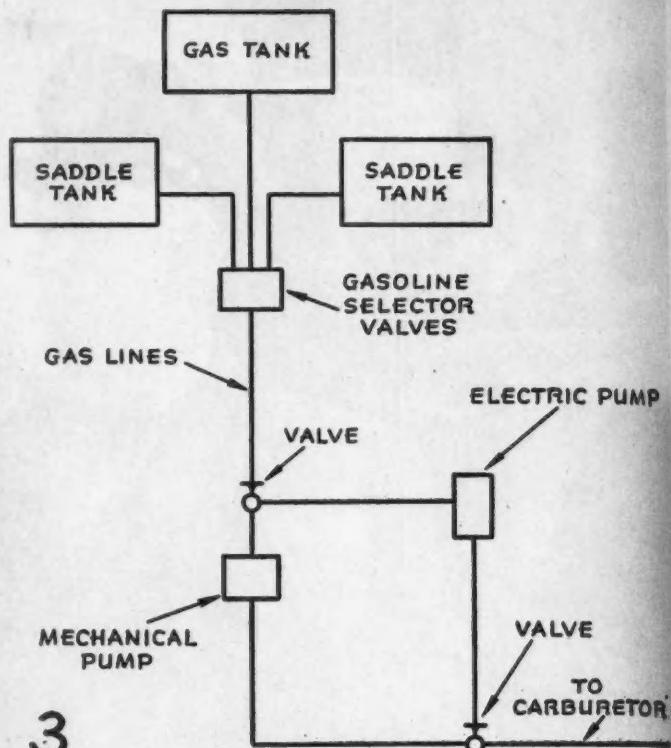
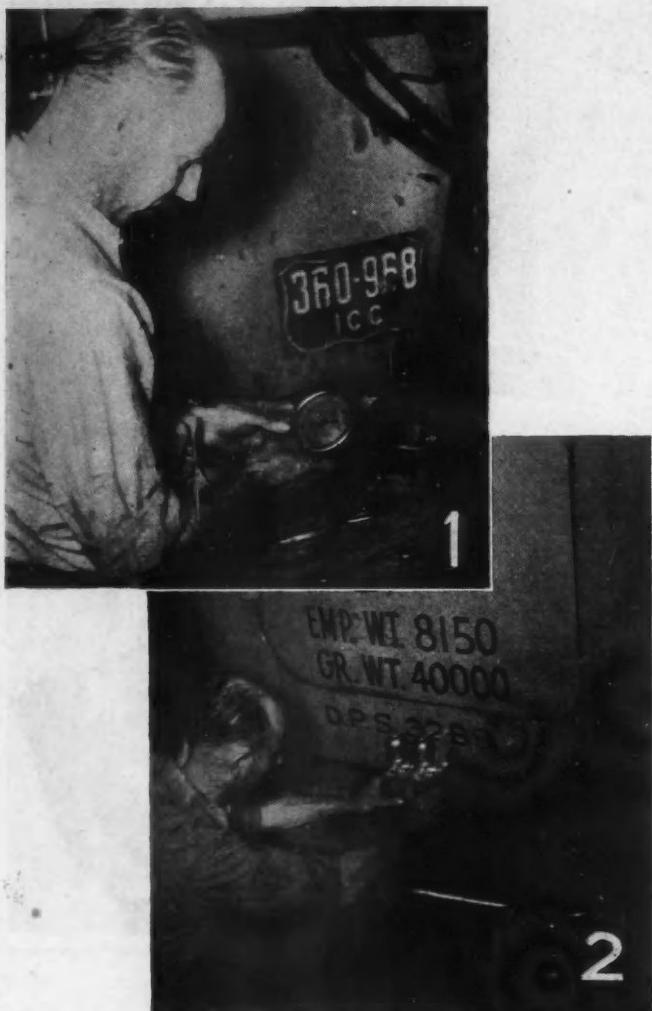


Fig. 1, upper left. Fuel pumps are checked each week for input and output. Fig. 2, left. Electric fuel pumps are mounted midway between the tanks and the carburetor for use in case the mechanical pump fails. Fig. 3, above. Hookup of auxiliary electric pump as installed on units

# Fleet "Tailors" Own Engines for

## MAKING BIG ONES OUT OF LITTLE ONES

"It is my opinion that a fleet can be tailored to suit its job and that this tailoring will greatly reduce the cost of operation . . ."

"We have a lot of medium grades on our runs and some of our units were of a size that required a gear shift just before the top. . . . Eliminating this shift is productive of economy, to say nothing of expediting freight . . ."

". . . It was found that all that was needed to convert our small engines to the next larger size—from 361 cu. in. engine displacement to 401 cu. in. was to change the crankshaft and pistons, which gave it  $\frac{1}{2}$  in. more stroke.

"This gave us better gas mileage and the power to pull over the hills."

This is one example of "tailoring" practiced by this fleet to improve performance and cut costs. The article gives others which many fleet operators may find profitable.

# Economy and P

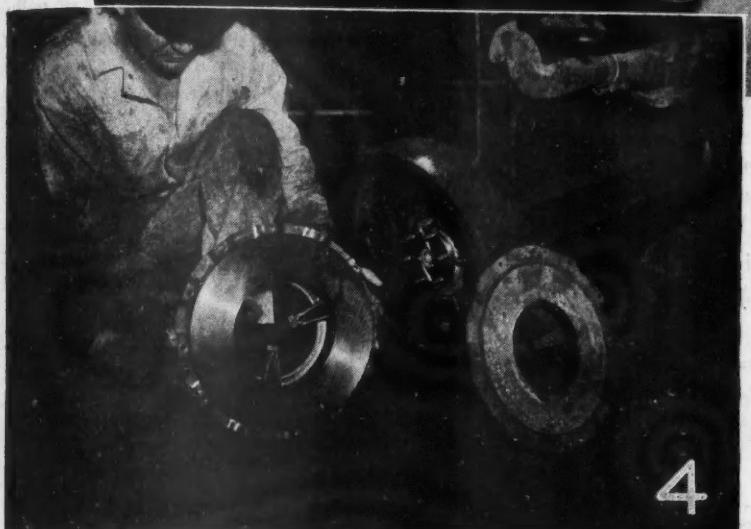
Converts 361-cu. in. engine to 401 cu. in.

with 14-in. units for longer life; stresses

**A**LL large troubles have small beginnings, but we trouble trouble and do it first if we can. We operate 20 units, running from 376 cu. in. displacement up to 501 cu. in. Our road breakdowns are less than two a year—it is a rare thing for our trouble car to go out



Fig. 4, lower left. 12-in. clutches have been replaced with 14-in. by changing the flywheel and installing new parts.  
Fig. 5, left. Voltage regulators are checked every 30 days



by J. I. ELLIS

Maintenance Superintendent  
East Coast Freight Lines, Richmond, Va.

# Performance

for more power, replaces 12-in. clutches

fuel pump and regulator maintenance

or for outside garage bills to clutter up the morning mail.

On the basis of small beginnings, we give extra attention, among other things, to the fuel pump. A fuel pump that is not performing right can cause crankcase dilution. Beginning there we have the old, old story of the horse-



J. I. Ellis

shoe that was lost because of a nail and the dire chain of circumstances that followed.

Dilution, as we all know, is dangerous any time. When the quality of the gasoline is low or unknown, it is doubly dangerous because often chemicals will attack the bearings. Sulphur in the gasoline which finds its way into the crankcase may have a harmful effect on babbit bearings and others. All of this is elementary but it leads up to the fact that dilution can be common when fuel pump pressure is too high and forces the gas past the needle valve.

Much of the detonation blamed on present gasoline can be traced to a lean mixture caused from a fuel pump that does not pump enough.

All of it has a direct bearing on the cost of gasoline per mile and what it costs the company to wheel a ton of freight up the road.

## Fuel Pumps Checked Weekly

WE CHECK all our fuel pumps for both input and output every week. Some fleets don't get fuel pump checks until the diaphragm breaks. I know of commercial repair shops servicing well known makes of automobiles in which all the check the fuel pump gets on a tuneup job is to make sure that it is pushing gasoline up to the carburetor bowl.

We check the pumps by disconnecting the inlet and the outlet tubing. For checking vacuum, we connect a vacuum pump to the inlet and run the engine about 1000 r.p.m. and get a vacuum reading of from 7 to 12 in. or know the reason why.

We put a pressure gage on the outlet side and check output pressure. On this we want between 2 and 3 lb.—never over 3. This is to insure that no gasoline is forced past the needle valve. Pressure too high will go by any needle valve and results in a rich mixture, may cause engine to flood out and is a fire hazard.

Sometimes we check for capacity but, usually, if the  
(TURN TO NEXT PAGE, PLEASE)

# Fleet Tailors Own Engines For Economy and Performance

(Continued from Page 77)

pressure is right the capacity delivered will be correct for the size of the fuel lines.

Somebody is almost sure to rise to remark that we go to too much trouble for a fuel pump check. In answer we know to be a fact from actual checks that an engine that apparently checks perfectly in the shop, considering that it runs and accelerates, indicating fuel pump is pumping, will ping on all the hard pulls because the pump is delivering insufficient gas. No matter what anyone says, this excessive detonation is damaging to engines. We are certain that an engine may be damaged more by this erratic lean carburetor condition than by thousands of miles of normal operation.

## Use Electric Auxiliary Pumps

WE HAVE installed an electric auxiliary pump on every one of our 20 tractors, for use in case the mechanical pump fails. These pumps are checked every week. In addition, each driver is instructed to use his electric pump for a part of every trip to be certain that it is in operating condition.

It costs us about \$20 to install this extra pump, but it is worth more than that in driver satisfaction, to say nothing of the security of having duplicate equipment. Our electric pumps are mounted level midway between the tanks and the carburetor and are bolted into the side of the frame under the driver's seat, as shown in Fig. 2.

At present, the driver has to stop and turn two valves under the hood and turn on his electric switch on the dash. We are changing these valves, however, so he can turn one off and another on from the dash. We experimented some with piping of the extra units and the one shown in the accompanying diagram, Fig. 3, seems to give us the best results.

Our run is from Richmond to Baltimore, Philadelphia and New York and some of our drivers use one

## PREMATURE CLUTCH WEAR STOPPED BY OVERRSIZING

"On certain units we had considerable clutch trouble. They were not slipping but were wearing out in 15,000 to 20,000 miles.

"Investigation disclosed that the 12-in. clutches in these units could be changed to 14-in. clutches by changing the flywheel and installing the new parts. This extra 2 in. gives more wearing surface and yet does not change the clutch characteristics.

"We changed all the 12-in. clutches, and our oldest 14-in. clutch has run 184,864 miles and tests perfectly."

pump on the up trip and use the other pump on the return trip.

## PM on Time Basis

IT IS my opinion that a fleet can be somewhat tailored to suit its job and that this tailoring will greatly reduce the cost of operation and increase the satisfaction of everyone from the general manager to the driver.

Our units runs the same mileage year in and year out, so we discarded all work done on a mileage basis and substituted a time basis. We keep records so that we can find out anything we want to know about mileage or how many miles a given part has run but maintenance work is done on an elapsed time basis.

Our units run 2200 miles a week. Certain operations are scheduled for two weeks, others for four weeks, with the calendar calling the time instead of the speedometer.

## Engines "Tailored" to Operation

WE THINK that fleet maintenance methods need to be shaped to fit the type of territory in which the

fleet operates. It is vastly different to operate in a flat country as compared to a mountainous region. It has a direct bearing on engine sizes, clutches, brakes and differential ratios. Some fleets have more start-and-stop and short hauls, while others hardly stop in two thousand miles.

We have a lot of medium size grades on our runs and some of our units were of a size that required a gear shift just before the top on most of these grades, while our other units were pulling them without shifting. Eliminating this shift is certainly productive of economy, to say nothing of expediting the freight besides making the unit more desirable from the driver's standpoint.

The obvious answer was to replace the smaller units with larger engines. Under wartime conditions that was not so practical and, besides, it was too expensive.

By checking the manuals and parts catalogs and consulting with the manufacturer, it was found that all that was needed to convert our small engines to the next larger size in the same make—from 361 cu. in. engine displacement to 402 cu. in.—was to change the crankshaft and pistons, which gave it  $\frac{1}{2}$  in. more stroke.

This gave us better gas mileage and the power to pull over the hills.

THIS change was not made all at once, as we had a good many of the smaller units, but, after it was decided upon, we stocked the parts and made the change at the regular overhaul period of the engine. This resulted in the installation of the new parts and the increase in the efficiency of the engine at about the cost of the parts, since the overhaul labor would have had to be done, any way.

By investigation, study of specifications and parts books and consultations with engineers and manufacturers, as well as by a close reading of technical trade journals, it is many times possible to make other changes to suit your own individual operating conditions. Just like the engine changes—the small engine would have given fine economy to an operator in a less hilly country and would probably run up a good record—but in our case it was costing us more money than the heavier units.

(TURN TO PAGE 128, PLEASE)

# FOR QUICK DELIVERY ON YOUR NEW TRUCK BODY

see your "L.S. JIM"

ALLIED VAN LINES  
INC.  
LONG DISTANCE MOVING  
SERVICES

## \*YOUR NEIGHBOR WHO KNOWS HOW TO STYLE TRUCK BODIES TO YOUR EXACT REQUIREMENTS

"Jim," your local Ls body builder, was chosen for his ability to handle your requirements promptly and intelligently—whether you need one or a thousand truck bodies. With his thorough knowledge of local operating conditions and highway regulations, he can develop a body to meet your individual needs—unhampered by shipping problems, he makes almost-immediate deliveries and does a factory job of repairs overnight. You'll find your nearest "Jim" listed below. Get in touch with him directly, or write to Lindsay and Lindsay, Adams-Franklin Building, Chicago 6, Ill.; 60 E. 42nd St., New York 17, N. Y.; or Lindsay Structure (Canada) Ltd., Dominion Square Bldg., Montreal.



### Lindsay Structure Truck Body Builders and Distributors

**ALABAMA**—Betze Spring Service, Inc., Mobile  
Hodo & Vandigraf, Montgomery  
Trailer & Equipment Co., Birmingham

**CALIFORNIA**—Yankee Motor Bodies Corp., Los Angeles  
Earl Sherman & Company, Oakland  
Norman S. Wright & Co., San Francisco and Los Angeles

**COLORADO**—The Winter Weiss Company, Denver  
D. C.—Ray B. Roberts, Washington 5  
Watson Automotive Equipment Co., Washington

**FLORIDA**—Allied Welding & Mfg. Co., Orlando  
Fyfe Body Works, Tampa  
Curry Trailer Co., Jacksonville

**GEORGIA**—Armor Insulating Company, Atlanta  
Carolina Body Works, Augusta  
Carley Trailer & Equipment Co., College Park  
Manly Jail Works, Dalton

M. E. Simpson, Meigs  
Green & Park, Sylvester

**IDAHo**—The Olson Manufacturing Co., Boise  
**ILLINOIS**—Erlinder-Platt Corporation, Chicago  
General Body Co., Chicago

**INDIANA**—Hercules Body Company, Inc., Evansville  
Branstrator Body Co., Fort Wayne  
Guedelhoefer Wagon Co., Indianapolis

**IOWA**—Brown Bodies, Inc., Des Moines  
Farmers Lumber & Supply Co., Sioux City

**KENTUCKY**—J. Edinger and Sons, Louisville

**LOUISIANA**—City Auto & Body Co., New Orleans  
MAINE—Wade & Dunton, Inc., Lewiston

**MARYLAND**—Watson Auto. Equip. Co., Baltimore

**MASSACHUSETTS**—Frank E. Snow, Inc., Lawrence

**MICHIGAN**—National Body Corp., Detroit  
Daleiden Auto Body Shop, Kalamazoo  
Twin City Manufacturing Co., St. Joseph

Barkley Body Works, Grand Rapids  
**MINNESOTA**—Chas. Olson & Sons, Minneapolis  
Mahl Auto Body Co., Inc., St. Paul

Ebenhoh Body Shops, Sleepy Eye  
**MISSISSIPPI**—A. P. Lindsey, Jackson

**MISSOURI**—American Body & Equipment Co., Kansas City

John J. Powers, St. Louis  
Brackels, Inc., Joplin

**NEBRASKA**—R. P. Olsen & Son, Omaha

**NEW JERSEY**—Cliffside Body Corp., Cliffside Park  
John Van Den Berg & Sons, Inc., Hawthorne  
Peter Wendel & Sons, Inc., Irvington

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**NEW YORK**—J. Becker & Sons, Albany  
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Franklin Body & Equip. Corp., Brooklyn  
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A. Praeger & Son, Brooklyn  
Frank P. Schmitt & Co., Brooklyn  
Watkins Body Corp., Buffalo

Everett Van Kleek, Kingston  
Peter McAvoy & Son, Inc., New Rochelle  
L. Koss & Sons, Inc., New York City

John Kreeb's Sons Auto Body Works, New York  
Lewisohn Sales Co., New York City  
Lindsay & Thomas, Inc., New York City 17

Service Wagon Repair Co., Inc., New York City  
Truck & Trailer Industries, Inc., New York City

Dichl & Sons, Inc., Richmond Hill

John Albert Co., Long Island City  
**NORTH CAROLINA**—Carolina Equipment Sales Corp., Charlotte

Murphy Body Works, Wilson  
The Acme Company, Asheville  
**NORTH DAKOTA**—Smith Com'l Body Works, Inc., Fargo

**OHIO**—Finn Auto Body Co., Cincinnati  
The Carnegie Body Co., Cleveland  
Hercules Body Sales Co., Columbus  
The Orrville Body Co., Orrville

Middlekauff, Inc., Toledo  
**OKLAHOMA**—Kelly T. Smith, Tulsa  
**OREGON**—Transport Bodies & Equip. Co., Portland  
Norman S. Wright & Co., Portland

**PENNSYLVANIA**—W. J. Thiele & Son, Johnstown  
M. A. Brightbill Body Works, Lebanon  
H. Bahnerberg & Son, McKeesport

Barry & Baily Co., Philadelphia  
Auto Truck Equipment Co., Pittsburgh  
R. E. Wallace Shop, Wilkes-Barre

**RHODE ISLAND**—Providence Body Co., Providence  
**SOUTH CAROLINA**—Southeastern Equipment Co., Inc., Columbia  
Rock Hill Body Co., Rock Hill

**SOUTH DAKOTA**—Acme Machine & Body Co., Sioux Falls

**TENNESSEE**—A. Fassnacht & Sons, Chattanooga  
Post & Company, Inc., Knoxville  
Southern Truck Company, Memphis

Liddon Motors, Nashville  
The Williams Co., Bristol, Virginia—Tenn.  
**TEXAS**—Parks Body Works, Dallas  
G & G Mechanical Co., Fort Worth  
Dow Motor Company, Houston  
Leland Equipment Co., Longview

**VIRGINIA**—Baker Equipment Eng. Co., Richmond  
Mason Mfg. Co., Newport News  
**WASHINGTON**—George Heiser Body Co., Seattle  
Norman S. Wright & Co., Seattle  
Washington Auto Carriage Works, Spokane

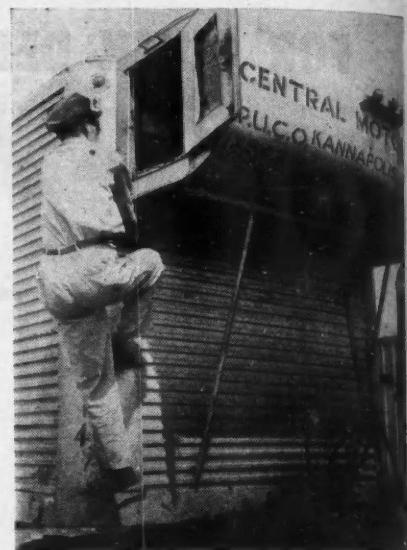
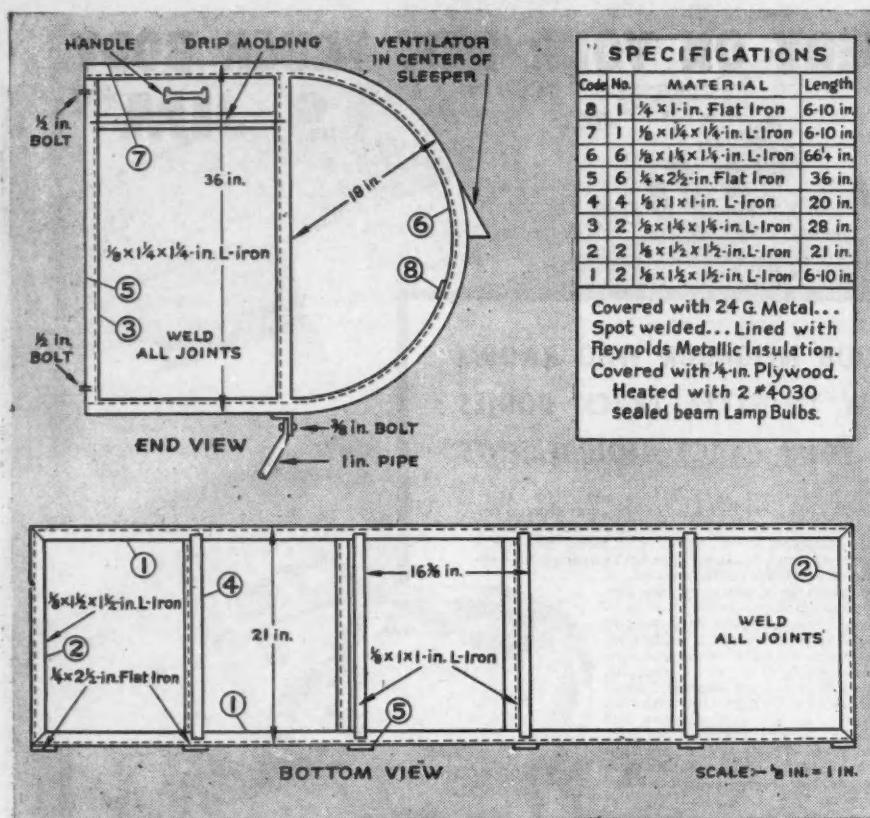
**WEST VIRGINIA**—Baker Equipment Engineering Co., Charleston  
**WISCONSIN**—Auto Body Works, Inc., Appleton  
Albert Abraham, Milwaukee  
**CANADA**—Lindsay Structure (Canada) Ltd., Montreal

**MEXICO**—Distribuidora Mexicana, S.A.  
Calle Bolívar #21, Mexico D. F.  
**HAWAIIAN AND PHILIPPINE ISLANDS**—C. M. Lovsted & Co., Inc., Seattle, Washington

# L S LINDSAY STRUCTURE

U. S. Patents 2017629, 2263510, 2263511  
U. S. and Foreign Patents and Patents Pending

DISTRIBUTORS AND BUILDERS THROUGHOUT THE COUNTRY



Above. Central Motor Lines' driver shown entering sleeper. Right. Construction details. Designed by this fleet's superintendent, the first ones were made in the shop but now they are part of trailer specifications and built by the trailer manufacturer

## Driver's "Upper Berth" Tops in Solid Comfort

Plywood-metal sleeping compartment, attached to trailer forepeak, has own lights, ventilator and is heated with sealed beam lamps

by L. H. HOUCK

**U**NIQUE sleeper for the extra driver on long runs is the trailer-attached sleeping compartment in use on all the units of the Central Motor Lines, Indianapolis, N. C.

According to those who use them, it has many advantages over the sleeper bunk in the cab. Being attached to the forepeak of the trailer, there is almost no engine and road noise and one driver said the air was clean and pure as if he were sleeping on the beach. There are no gas fumes to worry about or injury to occupant due to shifting of load.

The bunk was invented about 10 years ago by S. C.

Thrasher, maintenance superintendent for the company. The first ones were built in the company shops. Now, however, they are a part of their trailer specifications.

So far as is known, this is the only fleet operation using this type of sleeper bunk. There has never been a driver killed in one, even when trailer turned over.

Electric lights are placed so the extra driver can read if he wishes and he has a push button which blows the horn to signal the driver when he wants to come down. Glass doors and screen doors are provided in each end, so that driver can get in or out from either side.

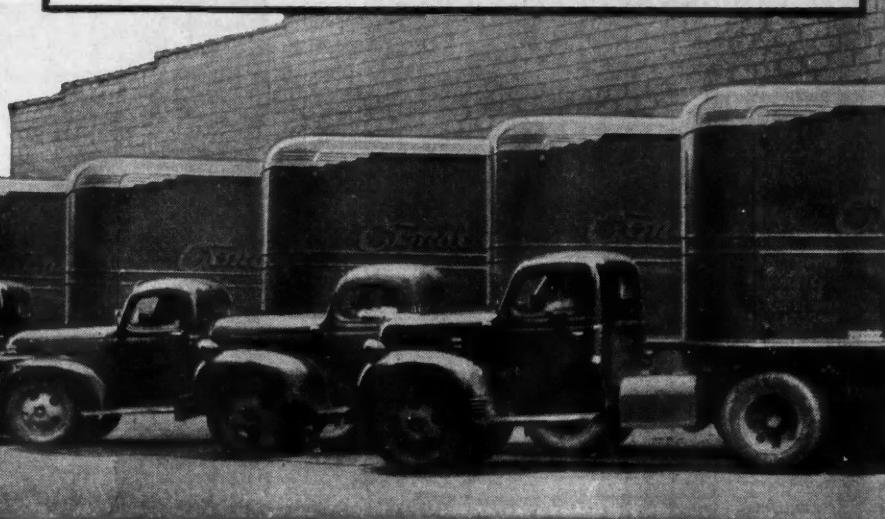
(TURN TO PAGE 130, PLEASE)

*A Company is known by  
the Customers it KEEPS!*

# CONSOLIDATED FREIGHT CO.

## Fruehauf User for 19 Years

Six new Fruehauf 28-foot units recently added to the Consolidated fleet.



A. F. Matthews,  
President, Consoli-  
dated Freight Co.

CONSOLIDATED FREIGHT CO. of Saginaw, Michigan, have used Fruehauf Trailers since they began business in 1926. Today their fleet of 140 Trailers is almost entirely Fruehauf.

The company has terminals in principal Michigan cities, as well as Toledo and Chicago, and maintains overnight delivery service between these points. The bulk of their hauling is package freight for busy automotive manufacturers and suppliers in the area.

### ONE TRUCK HANDLES EIGHT TRAILERS ON 60-MILE HAUL

Full use of the "shuttle" system is made throughout the Consolidated operation. "On

the 60-mile haul between Detroit and Flint, for instance, one truck and driver handle eight different Trailers in a night," says A. F. Matthews, President.

"The driver leaves Flint pulling a two-Trailer 'train', uncouples at Detroit, picks up two loaded Trailers there, returns to Flint, and then makes another round trip before morning, pulling 'double bottoms' in both directions.

### "SHUTTLE SYSTEM" SAVES TIME AND MONEY

"The shuttle method with Fruehaufs is the most efficient way to operate," says Mr. Matthews, "and means a big saving in equipment, manpower, time and money—with better service to our customers."

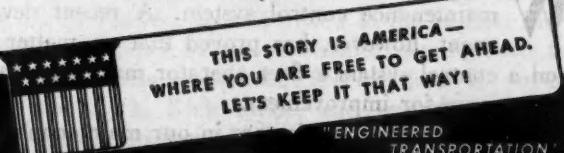
Companies like Consolidated Freight—the professional haulers of America—depend on their rolling equipment for their entire earnings. It is significant that these companies use more Fruehauf Trailers than any other make—that the majority have used Fruehaufs from the first.

World's Largest Builders of Truck-Trailers

**FRUEHAUF TRAILER COMPANY • DETROIT 32**

Service in Principal Cities

**FRUEHAUF TRAILERS**



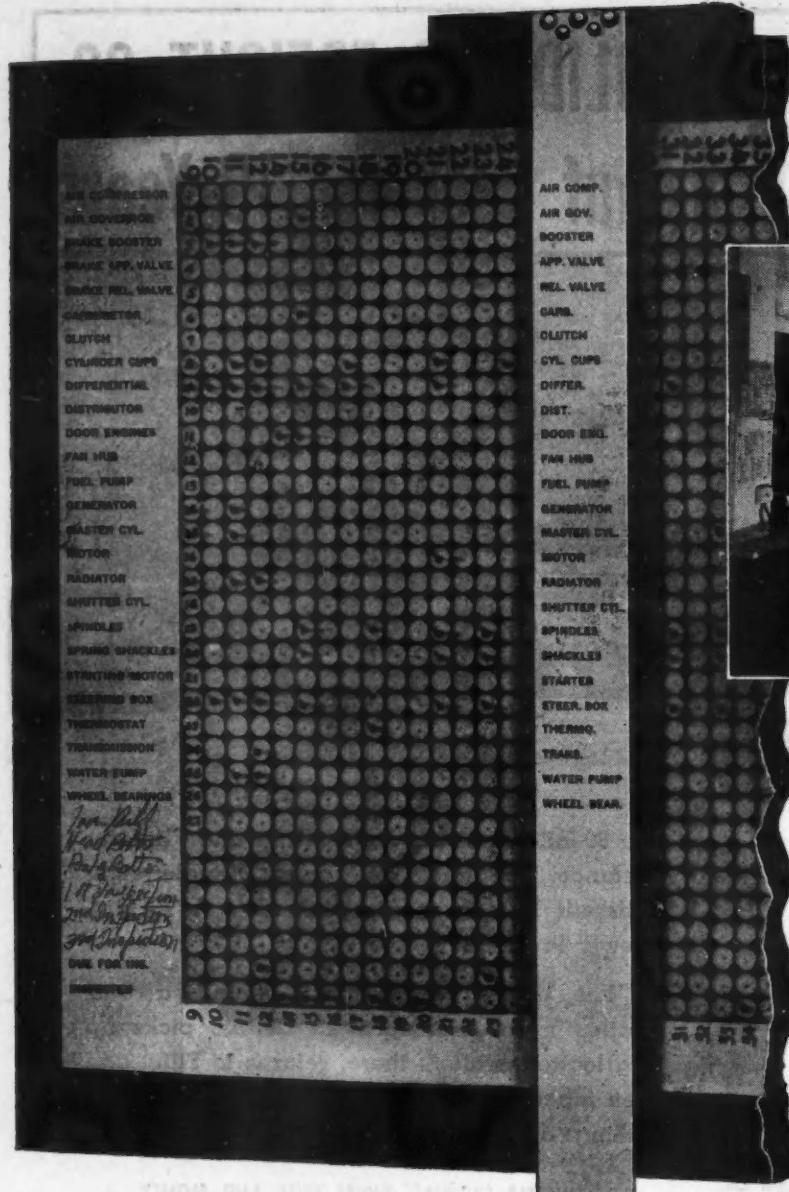
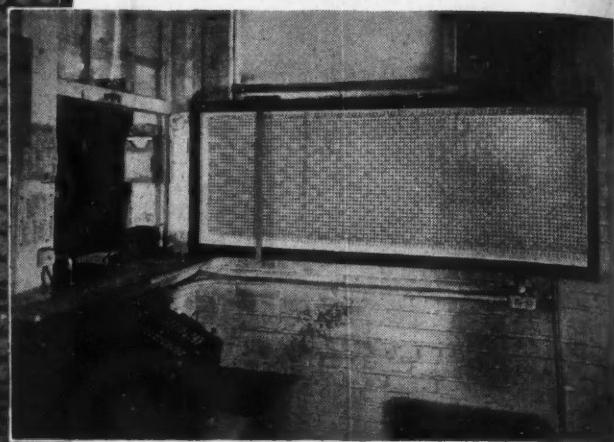


Fig. 1, below. The 6 x 2½-ft. Maintenance-Tel-Board shows at a glance when any of a vehicle's parts should be replaced to avoid road failures. Fig. 2. Close-up of left side of board. First column contains list of parts and assemblies. Numbers across top represent vehicles in fleet. Sliding indicator helps to identify parts to be changed



#### PINS POINT

This article describes a unique system that shows instantly which parts on a vehicle are approaching the end of their determined average trouble-free life expectancy. The heart of the system is called the Maintenance-Tel-Board—and does it tell!

"When the board was first completed," says G. A. Reaves, superintendent of motor coach maintenance, "there were 300 red pins on it, indicating that far too many

# Maintenance Control Board Drops Road Failures 66⅔%

**WE HAD** what we believed to be a satisfactory maintenance control system. A recent development, however, has proved that no matter how good a control system a fleet operator may have, there's always room for improvement.

One of the important factors in our maintenance program is what we call "determined mileage" of parts. This

is a parts replacement program based upon the average life of a given part or unit, determined from records of past performances of such parts kept over a number of years. Our records show, for example, that the carburetor on a certain type vehicle averages 20,000 miles before serious trouble can be expected. To avoid road failure of that part, we pull the carburetor at that mileage, or as

## TO POOR PARTS

parts and assemblies were due for overhauling or replacement. At this writing, 10 months after the board was put into use, there are about 30 pins and this number is being rapidly reduced. Furthermore, when the board was installed 102 of 105 vehicles showed one or more units requiring replacement. Now, with the fleet increased to 115, only 55 show no red pins."

While Capital Transportation Co. is a common carrier in the field of public transportation, its Maintenance-Tel-Board and related record system (which, incidentally, Kirk Enloe is having patented) should be adaptable to any fleet.

**Vehicle condition improves, shop and office efficiency stepped up by simple signal system that alerts mechanics on PM checks and replacement of parts before trouble begins**

soon thereafter as possible, and overhaul it; substituting, in the meantime, a previously rebuilt or new carburetor to keep the vehicle on the road.

This program covers 27 individual parts and assemblies. By timely replacements, we have been able to reduce road troubles to the minimum. We operate eight different types of buses and average parts mileage data are

Fig. 3. Unit Record, a 22 x 14-in. form, is divided into 32 sections (front and back) representing the parts on left side of board. Determined replacement mileage is shown in upper left corner of each section. Change mileage is indicated in column at the right.

by W. H. CURTIS

**Superintendent of Equipment  
Capital Transportation Co., Little Rock, Ark.**

kept separately for each type of vehicle in the fleet.

To make the "determined mileage" program work, we employ a system of accumulated mileage records. Up to recently, this consisted of several books of accounting ledger size in which each vehicle's daily mileage was posted. When a bus was pulled into the shop for any work, the mechanic on the job would go to the office to see what parts on that vehicle had reached the determined change mileage. Then he would make such replacements in addition to the particular job for which the vehicle was brought into the shop.

While the system was effective, it required quite a bit of time to get the desired information. The mechanic would ask the clerk for the information. Then the clerk would turn to the book for that particular vehicle and then leaf through the pages of mileage records for information on all the parts and assemblies that should be replaced at that mileage. This took quite a lot of time and, in the meantime, the mechanic's time was unproductive.

One day, our superintendent of motor coach maintenance, G. A. Reaves, became vexed at the endless interruptions occasioned by the mechanics coming into the office for the parts replacement information. He turned to his new clerk, Kirk Enloe, and remarked that he wanted some system worked out that would reduce the

(TURN TO NEXT PAGE, PLEASE)

CAPITAL TRANSPORTATION COMPANY Bus Operation Record												BUS No.															
Mileage			Gas (Gals.)			Gas Av.			Mileage			Gas (Gals.)			Gas Av.			Mileage			Gas (Gals.)			Gas Av.			
Oil (Qts.)			Oil Av.			Oil (Qts.)			Oil Av.			Oil (Qts.)			Oil Av.			Oil (Qts.)			Oil Av.						
Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	Miles	Gas	Ave.	
26						26						26						26									
27						27						27						27									
28						28						28						28									
19						19						19						19									
20						20						20						20									
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22						22						22						22									
23						23						23						23									
24						24						24						24									
25						25						25						25									

Fig. 4. Bus Operation Record, 16½ x 10½-in. sheet used to determine vehicle lubrication and inspection periods

## Maintenance Control Board

(Continued from Page 83)

time and effort in getting this information for the mechanics.

### Visual Control Board Devised

CLERK Enloe, too busy feeding the information to the mechanics during the day, worked out a novel idea at home. He devised a visual control board that would tell at a glance just which parts on any vehicle had reached the determined replacement mileage.

He constructed it of a piece of fibre board, 6x2x4 ft., and gave it a coat of white enamel. Then he ruled the board so that there were 115 vertical columns and 34 horizontal divisions. At the top of each vertical column Enloe placed numbers representing the various vehicles in the fleet. On the left side he inserted the names of the 27 units on which determined mileage replacement data was being kept. In addition, spaces were allowed for lubrication and inspection data.

### Colored Pins Signal Replacement

After the board was constructed, Enloe went through his records to determine the actual mileage of the various parts and assemblies. When this information was compiled, he posted it on the board, using various colored pins rather than actual mileage figures. For example, if his records showed that a distributor on a certain vehicle had just completed its average mileage life, he placed a green pin into the space provided for distributors and in the column under the particular vehicle number on which the part was in use. This signified that this part should be replaced at the mechanic's earliest convenience. Where records showed that the distributor, or other part, had accumulated mileage considerably in excess of the safe limit determined by experience, Enloe inserted a red pin in the proper space, indicating that the vehicle using this part should get immediate attention to avert road trouble.

The system is so flexible that other inspection and maintenance signals can be used. For these purposes pins of other colors are employed.

Thus, instead of leafing through many pages in the record books, it became possible to tell at a glance just which parts and assemblies required immediate attention.

### Sliding Indicator Speeds Reading

TO MAKE it still easier to determine which vehicles needed attention and which parts should be replaced, Enloe constructed a sliding indicator resembling a T-square. This was mounted on top of the board and arranged so that it could be easily slid across the board to any vehicle number column. To eliminate the need for referring to the left side of the board when checking vehicles located in the center of the board, or at far right, the headings contained in the spaces at the left end of the board were repeated on the indicator, thereby further simplifying the board's use.

Needless to say, with the Maintenance-Tel-Board, as Enloe calls it, office and shop efficiency took an immediate jump. Now, when a mechanic is at work on a vehicle, he walks into the office, slides the indicator over to the number of vehicle on which he is working, and the pins from top to bottom tell him at a glance the condition of the various parts and assemblies and the work required. Work is thus expedited, nothing overlooked, and considerable time saved for both clerk and mechanic. Not only are all required parts changed but PM inspections, oil and grease changes, anti-freeze checks and the various other periodic operations are automatically signaled.

### New Record System Devised

THE use of the Maintenance-Tel-Board led to changes in our office record system. Two new ledger sheets were designed to simplify the job of keeping mileage records and to make it easier to select the units and vehicles requiring attention. One of these, Fig. 1, is called the Bus Operation Record and is used principally to determine lubrication and inspection periods. When the accumulated mileage reaches the point where work is to be done, a symbol is used to indicate either operation and a colored pin is placed in the proper space on the Maintenance-Tel-Board. When the indicated work has been done, we do not continue using large mileage figures but start from zero. It is simpler than making comparisons and subtractions from actual odometer figures. Each

(TURN TO PAGE 156, PLEASE)



## C.C.J. QUIZ Score Card

- |                             |                              |
|-----------------------------|------------------------------|
| 1. <input type="checkbox"/> | 6. <input type="checkbox"/>  |
| 2. <input type="checkbox"/> | 7. <input type="checkbox"/>  |
| 3. <input type="checkbox"/> | 8. <input type="checkbox"/>  |
| 4. <input type="checkbox"/> | 9. <input type="checkbox"/>  |
| 5. <input type="checkbox"/> | 10. <input type="checkbox"/> |

Total Score \_\_\_\_\_

Several months ago we had a quiz on trucks of the PAST. Now we give you 10 questions on trucks of the FUTURE. You can take our word for it that the answers on page 152 are correct.

### 1.

Engine check-ups by mail may be the common thing in the days to come. Already, a laboratory in New York will furnish you with a complete diagnosis of your engine troubles if you just . . .

- a. mail a sample of oil drawn from the engine
- b. mail a sample of the exhaust gases
- c. mail a special disc recording of the sound of the engine while running

### 2.

"Polarization" is something you'll be hearing a lot about, so you might as well know now that it has to do with . . .

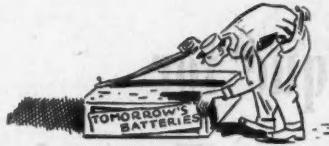
- a. even cab temperatures
- b. uniform engine temperatures regardless of speed
- c. driving on icy streets
- d. non-glare headlamps

### 3.

You'll find many metal parts on your truck of the future that have

been neither forged nor machined nor stamped nor cast. They will be made . . .

- a. by compressed air applied to semi-molten metal
- b. by molding metal flour
- c. by electrolytic accumulation



### 4.

If tomorrow's batteries are made of polystyrene, they will have this big advantage . . .

- a. They will cost one-half less
- b. They will be transparent
- c. They will be permanently charged
- d. They will be able to produce as much as 110 volts

### 5.

You can say good-bye to cross-firing and be able to maintain spark intensity no matter how high the speed whenever your ignition system is operated by . . .

- a. triple-size spark plugs
- b. spark-plugs with magnesium breaker-points
- c. electronic tubes
- d. supercharged duo-action distributors



### 6.

You'll be able to check the accuracy of piston rings within 0.001 in. in less than 5 seconds with . . .

- a. a vernier caliper
- b. a photoelectric piston ring inspection instrument
- c. an automatic gage block
- d. a vacuum cylinder

7. Yes, there will be a postwar civilian jeep in the truck field. To make these jeeps even more attractive for farm use, each one will be equipped with . . .

- a. a power take-off
- b. tractor treads
- c. a two-wheel trailer

### 8.

Bearings that will last as long as the rest of the engine are predicted for postwar trucks, largely because the war proved that one of the best bearing materials is . . .

- a. tungsten
- b. stainless steel
- c. silver
- d. urea formaldehyde plastics



### 9.

Any discussion as to whether synthetic rubber will replace natural rubber in postwar tires will probably only lead to a heated argument. It does appear, though, that one synthetic, namely butyl, is definitely slated as the innertube material of the future. Big advantage of butyl over natural rubber for this purpose is that . . .

- a. it is much cheaper
- b. it is more elastic
- c. it is less porous
- d. it has increased resistance to abrasion

### 10.

A Galvin installation in your post-war truck will mean that you will have . . .

- a. two-way radio communication
- b. instantaneous power brakes
- c. air-operated automatic clutch
- d. protection against freezing

## DATA ON LIQUID SEALS, TOO

Being a technician of the old school, Mr. Morton's interest in repairing automotive parts by welding has been to do the best job possible in the shortest possible time. But that is where his connection with the old school ends. Instead of adhering to the old methods, he has ever been on the alert to improve the technique of his craft, as his articles in the past have shown.

This article cites other examples. For instance: The engine block and cylinder head testing technique which he discusses, and which he has employed successfully for 25 years, has gained such wide recognition that

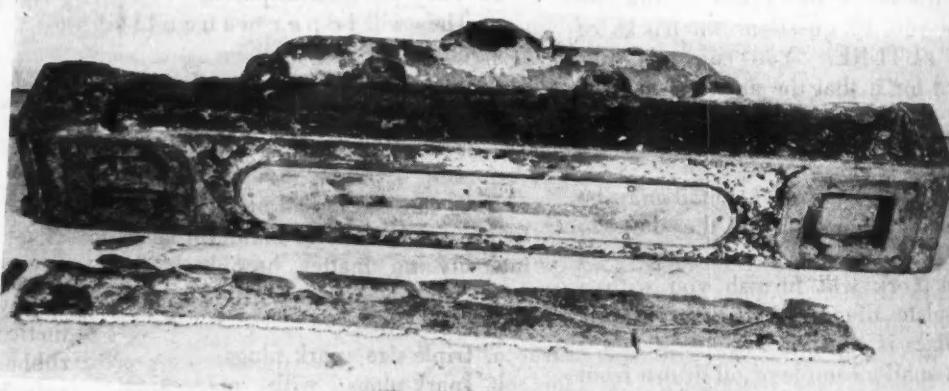
now similar equipment for this work is being commercially marketed.

Moreover, he has done some forward thinking and experimenting with liquid seals for use after repairing cracks in cylinder heads and engine blocks. Here is what he has to say about them. "More than 200 jobs have gone through last winter—bronze welded, made tight with liquid seal and with anti-freeze in the water jackets — and no come-backs due to the anti-freeze dissolving the liquid seal."

As readers know, Morton gives out with "solid stuff." This is a "must" article.

# Tools and Technique for Pressure Testing Heads and B

Fig. 1. The wall of this marine manifold was so thin that a chipping hammer broke it into bits



by **ALEX. F. MORTON** Welder, Retired, Central Motor Repair Shops, City of New York

**Test plate construction data and procedure for testing engine blocks in chassis, with or without head in place, or checking such parts after crack repairs**

WHILE bronze welding of engine blocks and cylinder heads by the surface heat procedure saves many hours in both the machine and welding shops, a most important and closely associated part of this routine is that of pressure testing these "water containers." This 25-year-old routine, the importance of which has been recently recognized by the manufacture and marketing of special equipment for this particular work, makes possible the pressure testing of engine blocks in place in the chassis, with or without the head in place. It

# d Blocks

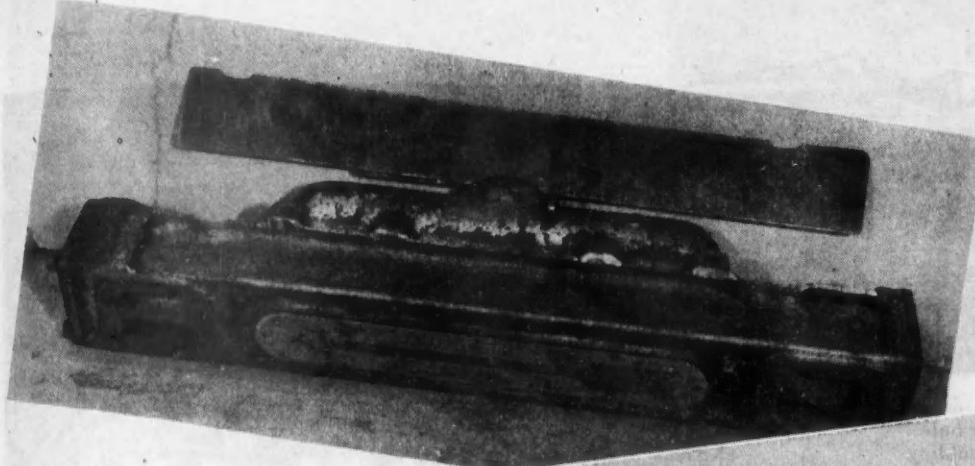


Fig. 2, left. Steel plate was bronze welded in place by surface heat procedure with a 3/32-in. rod and a No. 0 head. Bolt holes were then built up with bronze

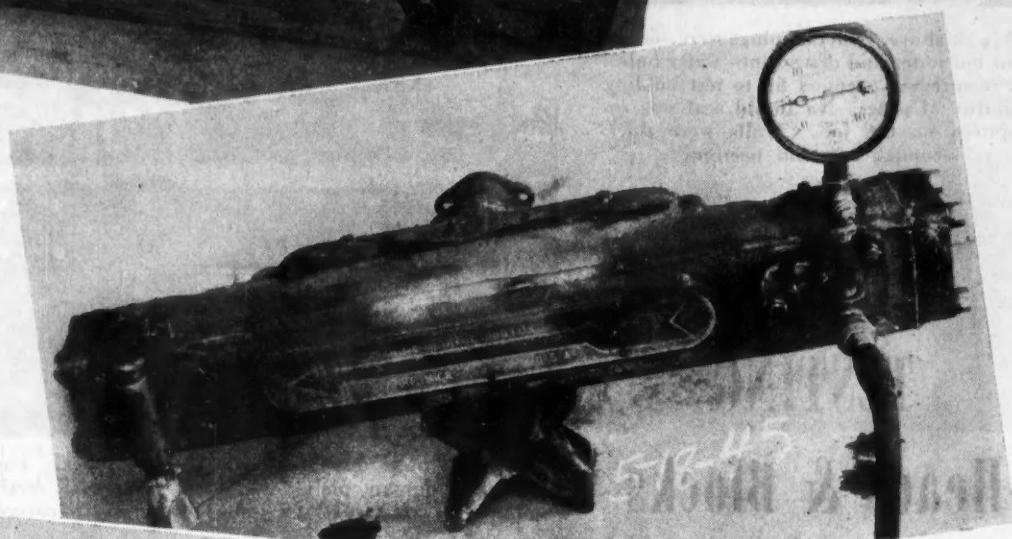


Fig. 3, above. After welding, the manifold was checked with the regulated pressure water test. A 4-lb. pressure test is sufficient for testing units of this type

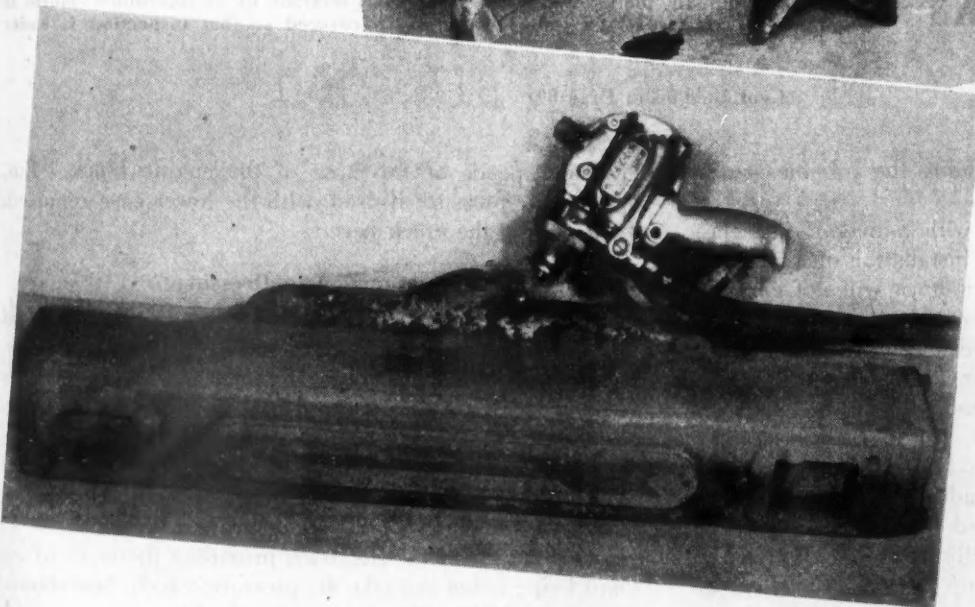


Fig. 4, left. Small cracks which showed up after the welding were sealed off with a metal spray gun. The manifold was again pressure tested and returned to service

also permits the testing of these same parts after they have been welded; whether by the old fashioned method of pre-heating or bronze welded in the unpreheated or cold condition, or when repaired by electric bonding or the mechanical method of sewing or lacing (also called cold welding).

Water in the crankcase can originate from more than one cause. Leaky, porous or cracked walls in the water jacket of the valve pushrod chamber, defective gaskets, an eroded channel on either the surface of the cylinder

head or engine block leading from a water passage to a cylinder bore, or just the plain age-old nuisance of cracks, from the bore up over the top surface, and down into either the exhaust or intake valve ports, are a few of the contributors to this condition plus a crack in the combustion dome of the cylinder head.

Much time can be expended in locating leaks but the method herein described, while apparently long winded, definitely puts the finger on the cause without guesswork

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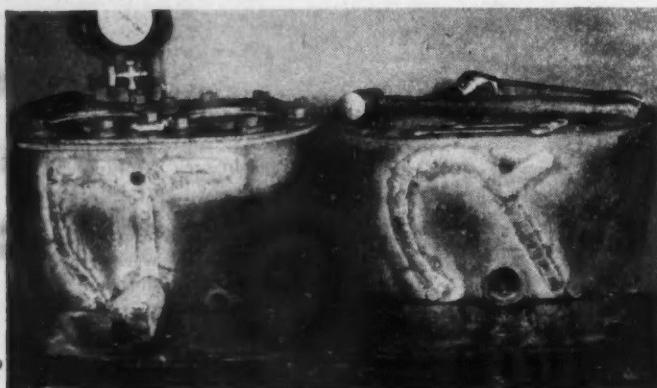


Fig. 5, above. Wooden plugs were soaked in hot water and driven into water holes. Pressure was stepped up to test holding ability of plugs. No liquid seal was required on the job. Walls were thick enough to stand peening

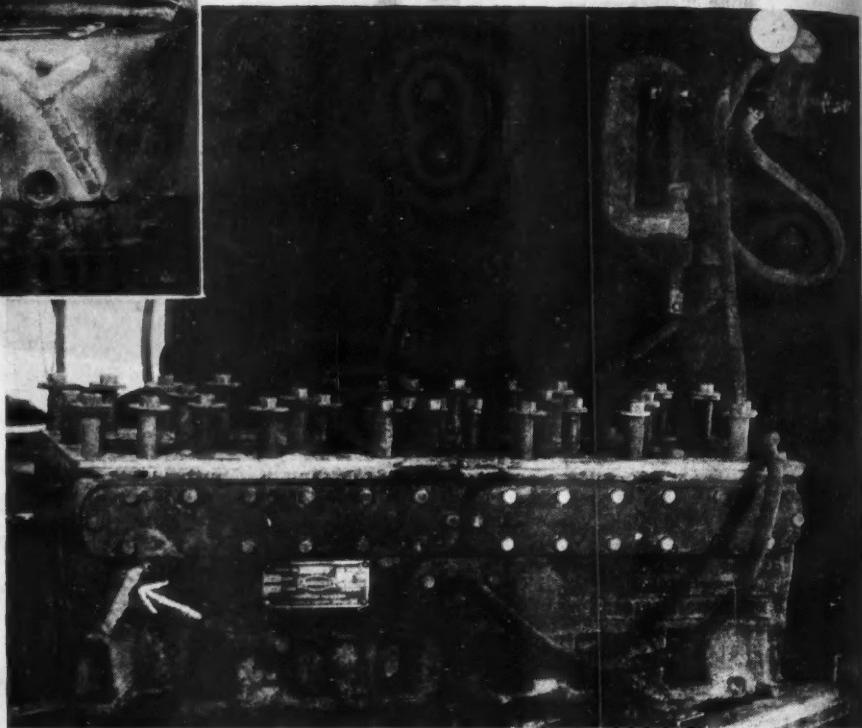


Fig. 6. A typical setup for testing engine blocks. Cap screws are used to hold the gasket and dummy plate for testing. Innertube sections or cotton-rubber fabric is used for gaskets. Only the water openings are covered so that inspection is easier

## PRESSURE TESTING Heads & Blocks

(Continued from Page 89)

and without the necessity of doing the job the second time.

When the visual inspection with a magnifying glass fails to uncover a leak, and the installation of a new gasket with the head tightly pulled down will not cure the trouble, then hot water and air pressure testing comes into use, and we repeat the head removal job—which might have been avoided in the first place by pressure testing, before removing the head. By testing the fully assembled engine in the chassis, under pressure, and examining the valve pushrod chamber, with no signs of a leak or porous wall, then the removal of the cylinder head or heads, will show water forced through the crack and on to the tops of the pistons, outlining the area of trouble.

Visual inspection may show up the cause, but a small crack in the combustion dome of the cylinder head concealed by a covering or layer of carbon, may pass the head as O.K. But rigging it up with the dummy plate and gasket and using hot water expands the head. A high pressure may be necessary to push the water through the concealed cause of the leak. So that the quick guess, that a new gasket will cure the trouble, only gives us more work.

Only when both the head and the block have been pressure tested, can we look to a warped head or a defective gasket as the trouble maker. In the case of a Ford V8, with no leaks showing, the removal of the crankcase may show the leak on the under side of the water jacket, alongside the lower part of the cylinder bore, when our pressure test has not uncovered the leak in either the

cylinder heads or top area of the engine block. But, again, the pressure if used, with the lower case removed, will outline the crack here.

### Water at Tap Pressure

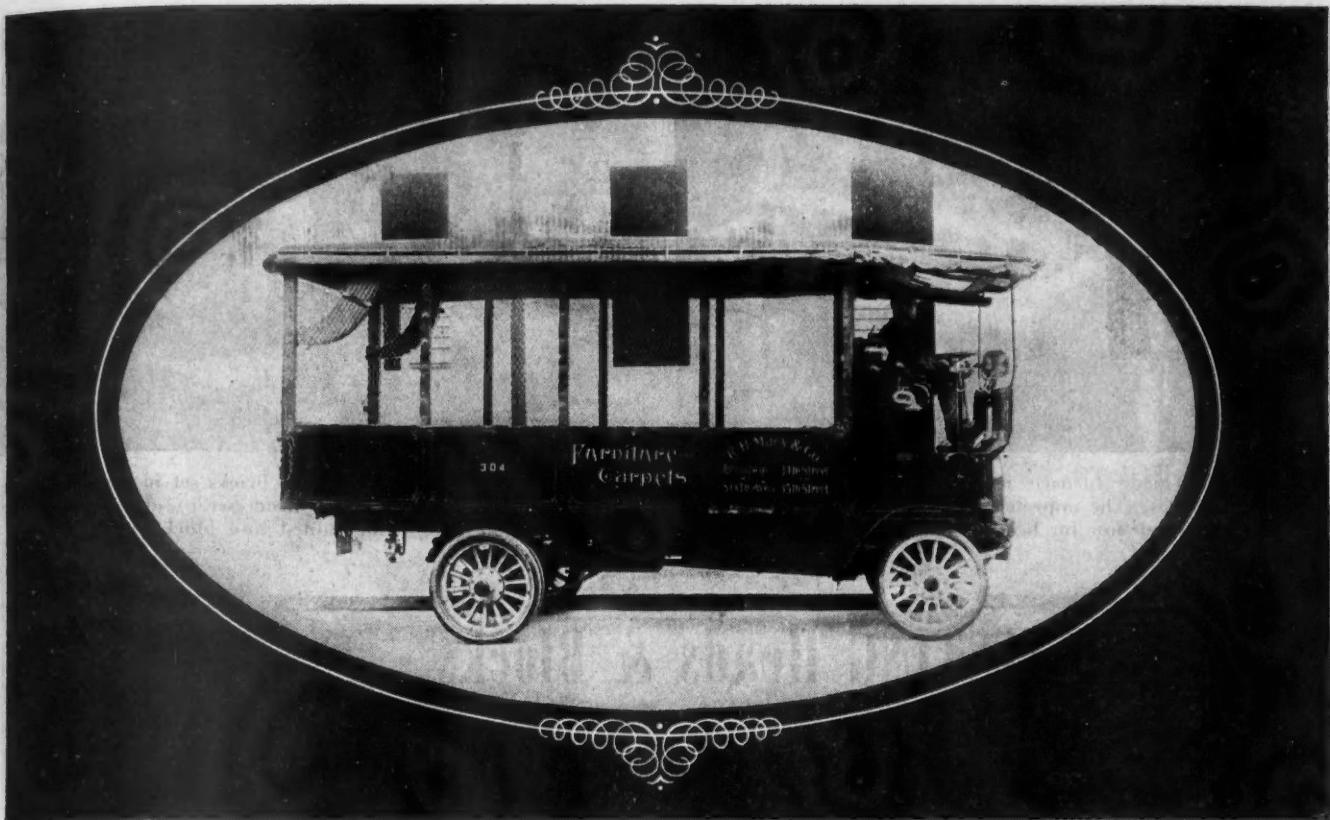
ONE of the simplest and possibly the oldest method of pressure testing is to disconnect the radiator hose, remove the water circulating pump, close these openings with a small cover plate and gasket, made for the particular type engine block to be tested, with another connection to the water inlet port, which has been connected to the shop water faucet. After filling the block with water, the city water pressure uncovers the leak.

That simple method is okay, providing the walls of the part being tested can take the pressure, which, hereabouts, is around 40 lb. However, the method is extremely risky and should be abandoned; no doubt it will be after the frost, Welsh or core knock-out plugs have been shot out of the engine block, injuring the mechanic, breaking window glass or doing other damage.

The water-cooled exhaust and intake marine manifold shown in Figs. 1, 2, 3 and 4 will serve as a good example. This part was another of these "unobtainables" which, by pre-war practice, should have landed in the scrap pile.

If ever a job was "jinxed" or a "hoodoo" this baby was it. To begin with, the wall removed was so thin that the chipping hammer broke it into a dozen or more parts, as shown in Fig. 1. The accumulated marine deposit inside was very hard, like cement, and had to be chipped

(TURN TO PAGE 92, PLEASE)



**When "Ain't it awful, Mabel?" was  
the latest thing in slang...**

### MACY'S CHOSE MACK...AND STILL DOES!

R. H. Macy & Company bought its first Mack way back in 1908.

That was the eighth year of Mack production, and Mack Trucks had already won a nationwide reputation as brawny demons for work. The first Mack was produced in 1900 in the Mack Brothers wagon works. It stayed on the highways for 17 years.

Mack can look back on 45 years of pioneering . . . 45 years of knowhow . . . 45 years of recognized leadership. Mack has had 45 years to observe where and why trucks give trouble—and to see to it that trucks named "Mack" don't!

That's why Macy's still chooses Mack. That's why, for nearly half a century, Macks have been the year-after-year choice of so many companies with outstanding histories of successful operation.

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**Mack Trucks, Inc., Empire State Building, New York I, N. Y. Factories at Allentown, Pa.; Plainfield, N. J.; New Brunswick, N. J.; Long Island City, N. Y. Factory branches and dealers in all principal cities for service and parts.**



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**Mack**  
TRUCKS  
FOR EVERY PURPOSE  
ONE TON TO FORTY-FIVE TONS



**NEW Mack Trucks  
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Ask for details.**

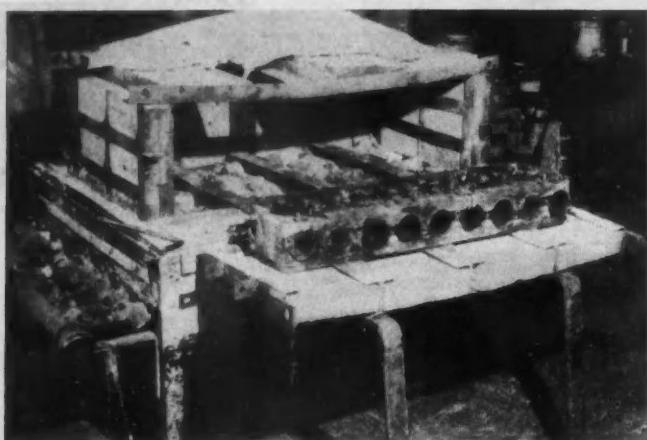


Fig. 7. Hand-made furnace used originally for preheating blocks and heads. The unpreheating technique has eliminated its need. Used now for heating water for pressure tests



Fig. 8. Furnace is made from fire bricks set in frame of angle iron. Slabs on top are made from scraps of asbestos paper soaked in water and molded into blocks 1 in. thick

## PRESSURE TESTING Heads & Blocks

(Continued from Page 90)

out; carefully for fear of going through the wall beneath.

After steel-grit blasting this water passage, we shaped a piece of 3/32-in. steel plate, shown in Fig. 2, to replace the broken pieces of the cast iron wall. Then, by the surface heat procedure (which eliminates any low, high, medium or any other preheating temperature) the new plate, or patch, was bronze welded in place, using a 3/32-in. bronze rod and a No. 0 welding head or tip.

The bolt holes on each end of the manifold, which were corroded and broken, were removed and built up with bronze, using a bronze in the group listed in type No. 1 by the American Welding Society (Page 626, chapter on bronze weld metals, in the 1942 Welding Handbook, which bronzes do not contain nickel, iron or manganese and cause less complaint, therefore, on the part of the machinist when drilling and tapping than do the manganese general purpose rods).

The patch and bolt holes finished, No. 1 "jinx" showed up. The machinist took up a little too much on the vise handle while holding it in the vise to tap, and squeezed a new crack in the thin-walled casting.

### City Water Pressure Too High

WHAT'S one more crack?—simply another welding job. So we fix it up and send it to its point of origin. At this point, the end plates were attached and, just to make sure the job was tight all around, it was hooked up to the city water line, which promptly gave us "jinx" No. 2—a new crack on the far side of the manifold, from end to end right alongside the bronze weld, with the steel plate badly bulged outward.

So off with the patch, which is no trouble at all, as some of our previous articles have shown, and a new patch was bronze welded in place. This time, having the end plates, we tested the job ourselves, as shown in Fig. 3. The wooden plug shown closing off the one port, is substituting for a cast iron plug which was not handy. We found numerous small cracks running off from the new crack. These we sealed off with the metal spray gun,

shown in Fig. 4. The manifold again was tested with a controlled, regulated pressure—only high enough to prove the job water-tight—and again sent on its way, with a threat to shoot the guy that brought it back. As far as I know, the job is still standing up, or perhaps it did break again and the threat to shoot someone, kept it away. It serves the purpose here, either way, to show the folly of uncontrolled pressure testing.

Inasmuch as the only pressure, if it can be called pressure, that this water container will be compelled to resist is that set up by the impeller of the water circulating pump. Therefore, the 4-lb. water-air test is high enough to prove the water-tightness of this thin-walled piece.

High-pressure testing then belongs in the limbo with the pre- and post-heating idea of bronze welding cast iron.

WOODEN plugs, previously soaked in hot water, driven into openings such as the one shown in Fig. 5 will stand very high pressures. While this particular block did not need this high pressure any more than did our thin-walled manifold, we stepped up the pressure for a photo.

The twin blocks shown in this illustration are part of a trio making up a 6 cyl. job. The welds were done without any heating except along the line of welding, and could be handled with bare hands, if required. In other words, the parts, except for the welding zone, were at room temperature, and did not require the aid of a liquid seal. The walls were thick enough to stand the small amount of peening made necessary by the few pin holes in the weld.

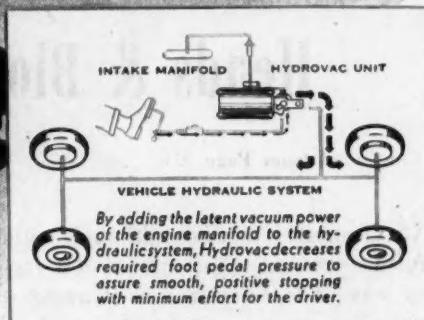
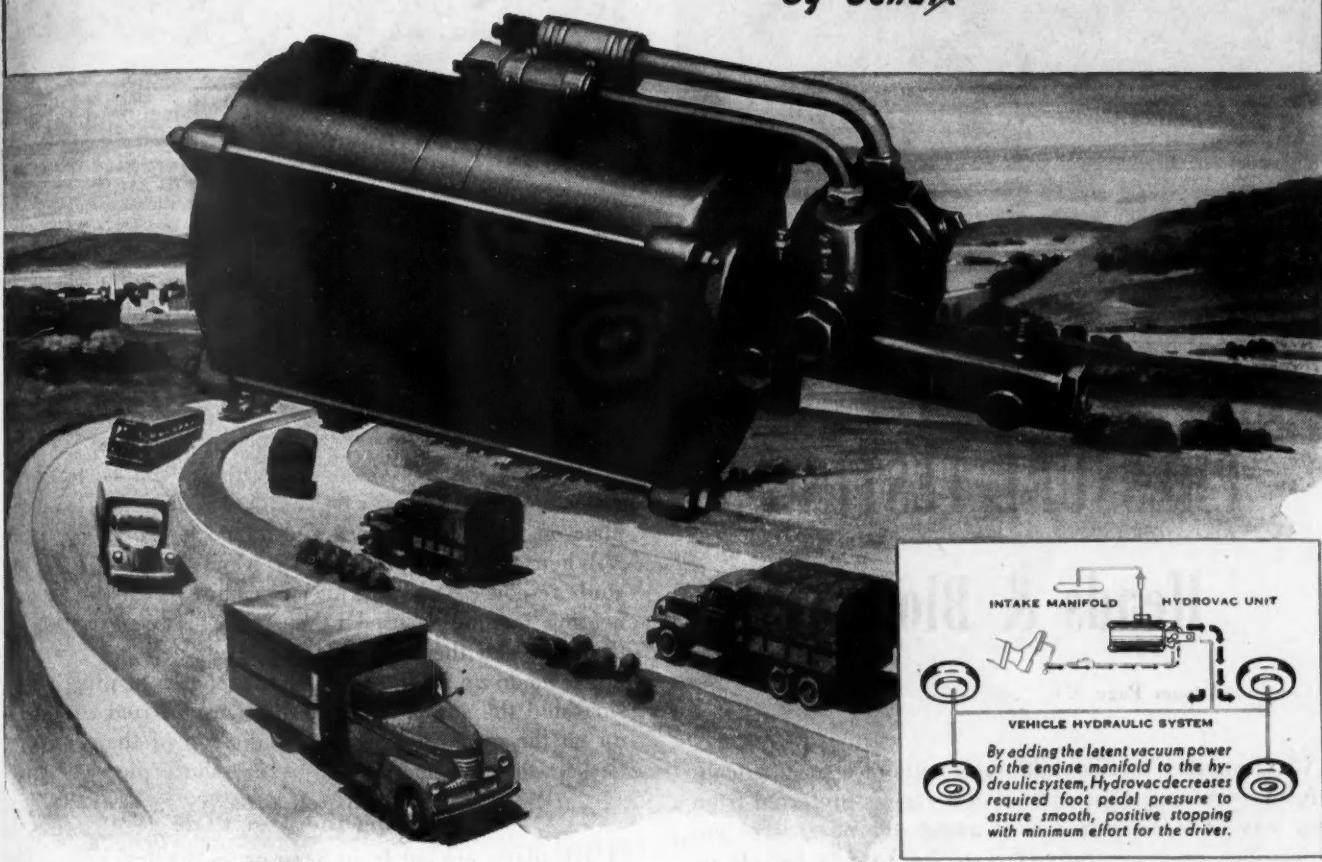
### Other Sources of Pressure

ANOTHER method, used in our early days, for the pressure testing of this work consisted of filling the part with water and hooking the oxygen hose onto a connection on the part. Then oxygen, pressure controlled by the welder's oxygen regulator attached to the bottle, was introduced.

(TURN TO PAGE 94, PLEASE)

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By Bendix



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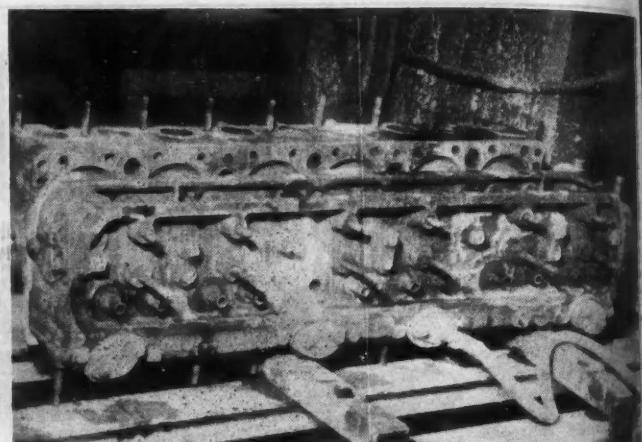
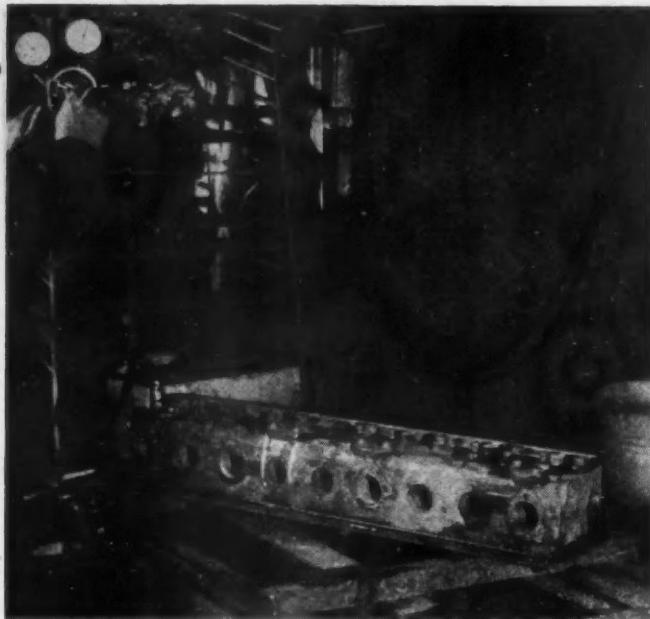


Fig. 9, left. Liquid seal used in sealing small cracks in heads and blocks drains into tank-like sink below. Drain cocks permit liquid to be salvaged for use on other jobs

Fig. 10, above. One of the time and labor-saving advantages of surface heat, bronze welding. One valve guide was removed, whereas all studs and guides are removed when preheating

## PRESSURE TESTING Heads & Blocks

(Continued from Page 92)

Still another method, although without a gage to control the pressure, (and the use of a gage is preferred from my way of looking at it as it avoids the hazards of uncontrolled pressure testing) is to hook up a bicycle or automobile tire inflating pump onto a connection on the head or block. When the arms get too tired to pump much more, we have enough pressure, as any one can confirm who has had the pleasure(???) of inflating a flat tire with this type of pump.

### Equipment for Pressure Testing

A TYPICAL setup for testing an engine block is shown in Fig. 6. It will be noted that the cylinder head stud bolts were removed. Cap screws are used here to hold the gasket and dummy plate in place for the testing operation. While rubber is used for gaskets, two or three layers of discarded inner tubes have answered the purpose, as have several layers of heavy canvas, previously water soaked and swollen. Rubber and cotton-rubber fabric are best.

In the absence of enough rubber to make a continuous gasket, small sections of thick (1/4-in. up) rubber, fastened on both the top and bottom sides of the test plates and covering just the water openings or passageways will do very well. In fact, this is the best gasket arrangement for these test plates, for it gives us more of the surface to inspect, whereas the continuous gasket may cover, in some instances, cracked spots.

We suggest the fastening of the rubber sections to the top and bottom sides of these test plates for the reason that these plates are used interchangeably on the head

or the block. Plugs or corks of rubber, shaped to fit the water openings also can be, and have been, used with the plate on top of these plugs and bolted fast.

When testing engine blocks which do not have the studs removed (which is the procedure when the no pre-heating method is used) the space between the top of the plate and the underside of the washer and fastening nut is made up by the use of short lengths of pipe, which surround the stud bolt. The pressure exerted by taking up on the nut is transferred to the top of the plate and gasket, through the length of the short piece of pipe.

### Making the Test Plate

THE plates are cut from 5/16 or 3/8-in. steel plate. The regular copper cylinder head gasket is used as a pattern for size and shape, to lay out the bolt holes, as well as to mark off the area not wanted (which is removed by the cutting torch). By removing all unnecessary material from the plate, all parts of the unit tested can be inspected, except the section hidden by the gasket and dummy plate. In the case of the engine blocks, it exposes the valve ports and cylinder bore. When used on the cylinder head it also makes visible the surface of the combustion head.

The one-piece six cylinder engine block has its test plate cut into two parts, for the reason that the heads are two pieces, each covering three cylinders. In the case of the 6 cyl., three unit engine block, one plate will do the job for both the engine block units and the separate heads for each block.

After being rigged with the gaskets and plates, the head or block to be tested is filled with hot water from the hot water faucet; that is, when we can get it. When unavailable, we heat water on our old preheating furnace, which is about all it is used for these days.

Cold water used for testing under pressure, contracts the part undergoing the test, and many times will pass a part as tight only to have it open up when under the temperature of the cylinder head or block in normal operation.

(TURN TO PAGE 144, PLEASE)

New X-ray equipment is used by laboratory technicians to study piston ring castings.

**For better re-powering  
in any truck engine—  
any cylinder condition**

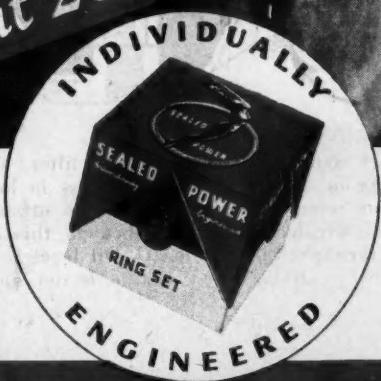
### **26 BASIC DESIGNS**

Whatever the make of engine, whatever the degree of cylinder wear, there is a Sealed Power Individually Engineered Piston Ring Set specifically tailored to that special job. The rings in these sets are selected from twenty-six (26) basic designs. Sealed Power has been refining these sets over six years—has been producing rings for car, truck and engine manufacturers 34 years. For best results, re-power with Sealed Power motor parts. Sealed Power Corporation, Muskegon, Michigan and Windsor, Ont.

*Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves,  
Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts*

**Buy More War Bonds and Keep Them! Pay \$3—Get \$4!**

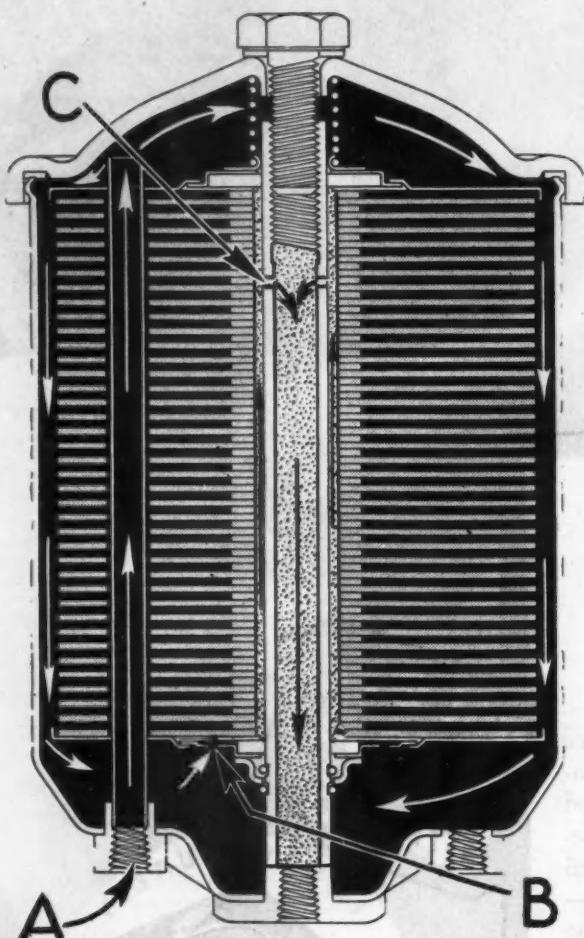
not 2...  
not 6...  
but 26



# **SEALED POWER PISTON RINGS**

**BEST IN NEW TRUCKS! BEST IN OLD TRUCKS!**

# Features of New Fram Filter and Filcron Cartridge



A. Inlet stand pipe of new Fram filter. Oil enters at base, resulting in shorter lines. B. By-pass in bottom of cartridge. Oil from pump gallery flows out top of stand-pipe, circulates around cartridge and passes through this by-pass. Clean oil leaves through center tube. C. Oil level is maintained at this point when engine is not operating

**Stand pipe maintains high oil level for better heating and lubrication. New type cartridge removes .000039-in. impurities**

flowing through its discs, is cleaned in one pass. Because of its outside-in-flow construction it is said to have a higher clean oil flow rate and a greater dirt capacity. Not encased in a can, it has less weight, and its longer life reduces the operating cost per mile.

Filcron is an all-purpose cartridge made from a specially prepared cellulose material. Fram research engineers did not limit its use to Fram postwar filters, but made it serviceable also in Fram prewar models of the same size. One cartridge may be used for all three Fram types, thus avoiding duplication of stocks.

#### Fram Postwar Filters

NEW structural features are incorporated into the Fram postwar filter, both strap and base-mounted models. Foremost of these is the inlet stand pipe which has several important functions.

This inlet pipe leads the incoming oil to the top of the filter, permitting the hot oil to travel completely around the cartridge. This is a particular advantage in cold weather driving, since it more quickly brings the oil in the filter to the temperature which permits the most efficient filtration to begin at the earliest possible moment.

The stand pipe also is designed to keep the oil at the level of the drain hole in the center tube, the highest possible point in the filter, when the engine is not operating. This assures an adequate supply of oil when the engine is started, and prevents the filter becoming filled with air which has to be expelled before proper filtration can begin.

This construction also permits shorter lines being used, since all lines enter at bottom of filter. This results in less chance of injury to the lines.

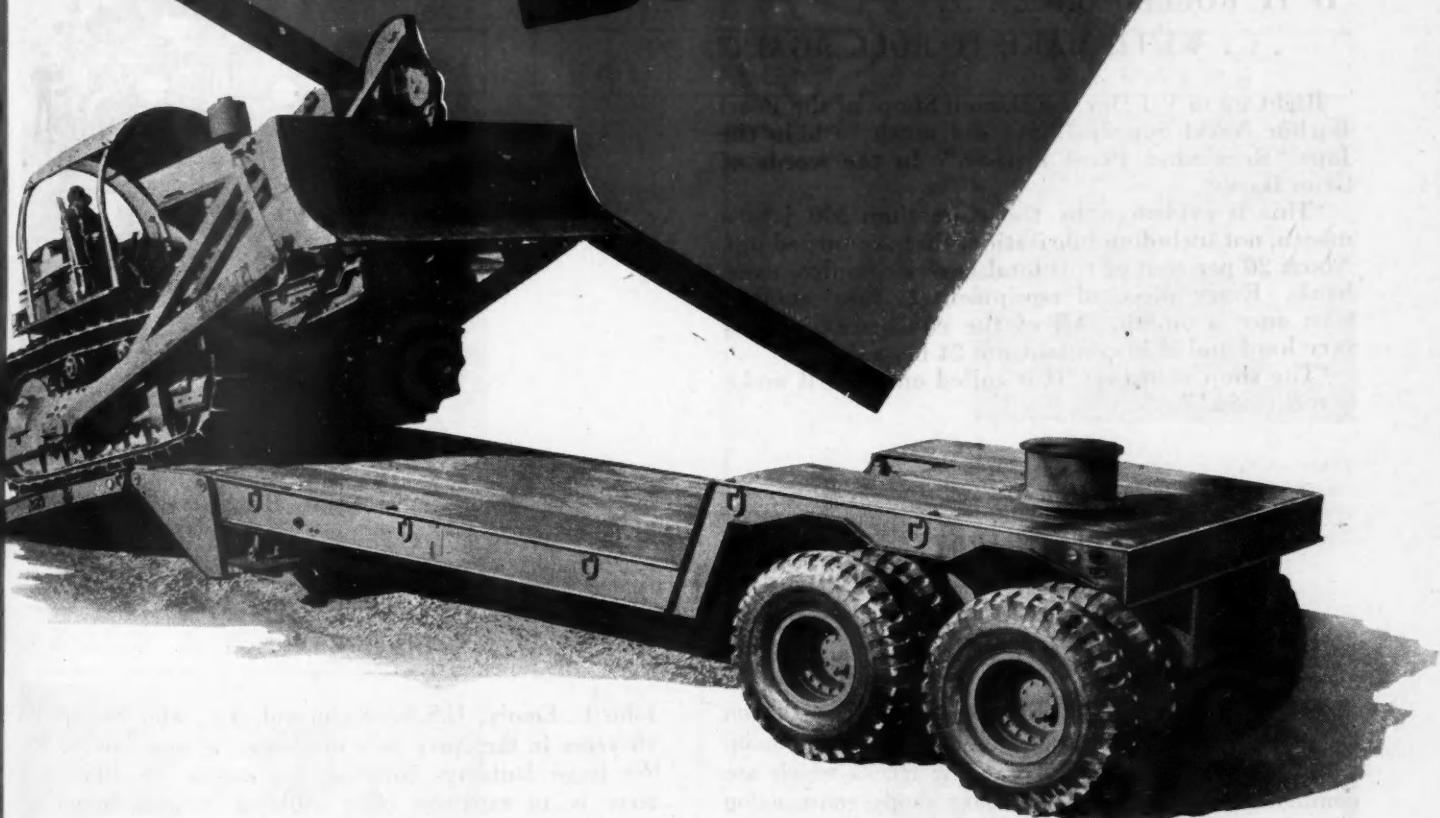
The Fram postwar filters with Filcron, designed for light and medium trucks in the series 30, are new and especially designed units with base mountings, and come complete with lines and fittings ready for quick and easy installations. A truck owner need but specify his truck make and model to be serviced with one of seven tailor-fitted filters.

These are designed for all V-8-85 and 90 Ford trucks.  
(TURN TO PAGE 120, PLEASE)

**R**ELEASED from exclusive duty to the armed forces Fram's new oil filtering cartridge, the Filcron (micronic filtration), heads an imposing parade of innovations to the Fram line and is now available to civilian users. Its principle had been discovered and worked on before the war, but was developed and perfected under the spur of military necessity. This new type cartridge is said to remove particles smaller than one micron (.000039 in.). It has proved an answer to the high standards demanded by the armed forces.

Advantages of this cartridge are said to be many. Considering the minuteness of the particles it catches, a Filcron removes all solid materials from the oil which,

# SHULER AXLES FOR GUNDERSON BROS.!



Carrying tanks, bulldozers and other heavy equipment over open country and shell-pocked battlefields was no job for sissy vehicles or sissy axles. So in building its 20-ton trailers for the U.S. Army Engineer Corps,

Gunderson Bros. specified *Shuler Axles*. Shuler Axles can take (and like!) your tough assignments, too. Despite their known high quality, *they cost no more*. We'd be mighty happy to quote you.

**SHULER AXLE CO., Incorporated, LOUISVILLE, KY.**

Export Division: 38 Pearl St., New York, N. Y.

West Coast Warehouse: Ford & Derby Streets, Oakland, Calif.

# They "MAKE 'EM ROLL AGAIN"

## at Pearl Harbor

In five buildings, on five acres in a sugar cane field, 500 civilians maintain 600 gasoline-powered trucks, 143 diesels and other

Naval Supply Depot's automotive equipment

"IF IT ROLLED ONCE . . .  
. . . WE'LL MAKE IT ROLL AGAIN"

Right up to V-J Day the Damon Shops of the Pearl Harbor Naval Supply Depot did much to help the Japs "Remember Pearl Harbor." In the words of Gene Hardy.

"This is evidenced by the more than 300 jobs a month, not including lubrication, that are turned out. About 20 per cent of this total covers complete overhauls. Every piece of equipment is lubricated at least once a month. All of the equipment is used very hard and is in constant use 24 hr. a day.

"The shop motto is: 'If it rolled once, we'll make it roll again.'"

by GENE HARDY

Commercial Car Journal War Correspondent

**P**EAL HARBOR, T. H. (Delayed)—The Damon Shops here are a unique study in automotive maintenance, for, in addition to the trucks which are constantly moving through the many shops, construction and dock equipment is also assigned. This organization has been built up in the last two years and was a sugar cane field before the Navy went to work.

Now there are more than 600 gasoline trucks, ranging from  $\frac{3}{4}$  ton to 5 ton; 143 10-ton diesels; and many industrial power trucks, including 33 lumber carriers, 40 mobile cranes and several dozen fingerlifts moving in and out of the shops.

The trucks for the Naval Supply Depot, which haul the supplies to and from ships, are the largest maintenance factor. This organization, headed by Lt. (j.g.)

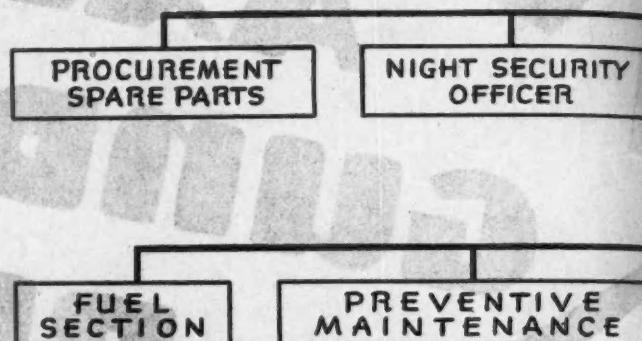


Fig. 1. Preventive maintenance adds thousands of extra miles to Navy vehicles. Here truck is lubricated

John L. Emory, U.S.N., Richmond, Va., who has spent 16 years in the Navy as a machinist, is now housed in five large buildings covering five acres. In addition, there is an extensive office building housing about a dozen people, necessary to keep the shop records in order.

One of the most interesting projects at the Damon Shops is the automotive maintenance on-the-job training course under the supervision of C.M. John L. Lusk, U.S.N.R., Portland, Ore., formerly connected with the Ford Motor Co. and its agents. Motion pictures, text books and lectures are used in this program. Each person employed here is required to attend three nights per week for three hours per night, regardless of experience.

(TURN TO NEXT PAGE, PLEASE)

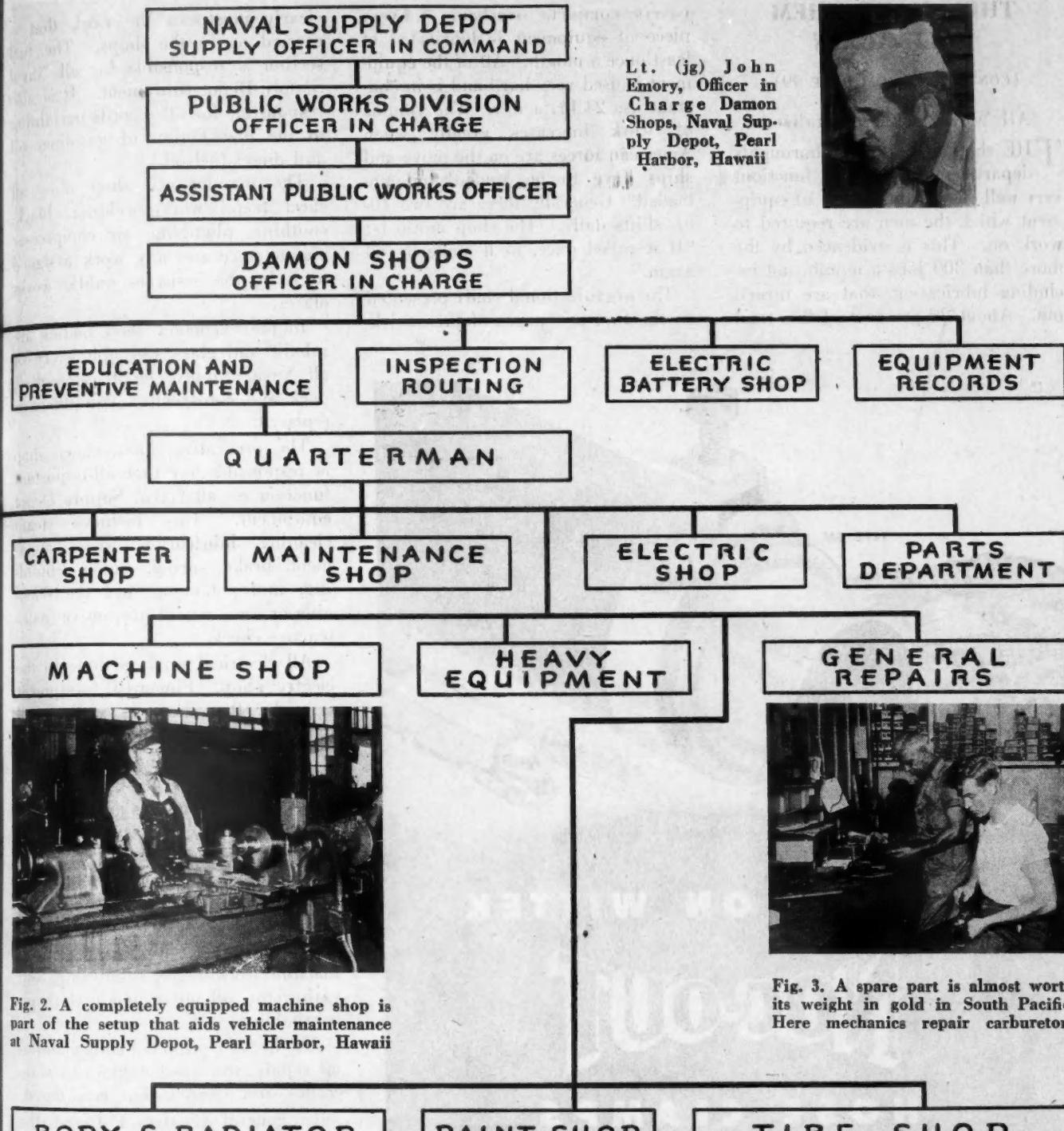


Fig. 2. A completely equipped machine shop is part of the setup that aids vehicle maintenance at Naval Supply Depot, Pearl Harbor, Hawaii



Fig. 3. A spare part is almost worth its weight in gold in South Pacific. Here mechanics repair carburetors



Fig. 4. Workman with an acetylene torch welding a carrier on a jeep. This is the body section, where all body parts are reconditioned

Official U. S. Navy Photographs

Fig. 5. One of the preventive maintenance operations that makes tires last longer. Stones and nails are being removed from tire tread

## THEY MAKE THEM ROLL AGAIN

(CONTINUED FROM PAGE 99)

### All Work Departmentalized

THE shop operation is thoroughly departmentalized and functions very well despite the variety of equipment which the men are required to work on. This is evidenced by the more than 300 jobs a month, not including lubrication, that are turned out. About 20 per cent of this total

covers complete overhauls. Every piece of equipment is lubricated at least once a month. All of the equipment is used very hard and is in constant use 24 hr. a day. The volume of work increases greatly when American forces are on the move and ships have to be loaded and unloaded. Generally there are two 10-hr. shifts daily. The shop motto is: "If it rolled once, we'll make it roll again."

The organizational chart presented on the first two pages of this article

clearly illustrates the work that is carried on in the shops. The fuel section is responsible for all Naval Supply Depot equipment. It is also responsible for all records pertaining to the distribution of gasoline, oil and diesel fuel oil.

The maintenance shop does all sheet metal work, welding, blacksmithing, plumbing, air compressor maintenance and any work assigned to it by the assistant public works officer.

In the carpenter shop bodies are rebuilt and glass and upholstery of all Naval Supply Depot automotive, dock and construction equipment is replaced.

The preventive maintenance shop is responsible for that all-important function on all Naval Supply Depot equipment. This includes steam cleaning, lubrication, wheel alignment, brake, spring, clutch rebuilding, motor tune-up and the 6000-mile or semi-annual preventive maintenance check.

All electrical work is done in the electric shop. Finger-lift equipment is under this shop, as well as all battery charging stations.

The parts department is responsible for the procurement of all spare parts and tools and has custody of all parts and tools, stock upkeep, stock records and perpetual inventory. Parts are very scarce and, as throughout the Pacific, it is a case of buy, beg, borrow or steal.

The machine shop does all job machine work, motor rebuilding, and carburetor, oil pump and fuel pump overhauling.

The heavy equipment shop handles all repairs on diesel engines, mobile cranes and construction equipment.

In general repairs, I found the greatest variety of work going on, including the repair of gasoline engine trucks, pickup trucks and passenger carrying vehicles, lumber carriers, as well as mechanical repairs to light plants and dock jitneys.

In the body and radiator shop body and fender repairs are carried out for all equipment. All radiator repairs as well as welding, where necessary in repairing bodies, is done here.

The paint shop prepares and paints all Naval Supply Depot automotive, dock and construction equipment.

(TURN TO PAGE 102, PLEASE)

TYPE GM

DEPEND ON WITTEK

NOC-OUT

HOSE CLAMPS



Type A—Adjustable  
For Replacement.

The standard of the industry. Quick-tightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.



Type HP—For High Pressure Requirements.

**WITTEK** **NOC-OUT**  
HOSE CLAMPS

For More Than  
Thirty Years  
in War and Peace  
Rich Valves Have Been  
Contributing to  
Better Engine Performance

# RICH VALVES

are manufactured by the Wilcox-Rich  
Division of Eaton Manufacturing Co.,  
and distributed exclusively by the

**McQUAY-NORRIS  
JOBBERS**

## THEY MAKE THEM ROLL AGAIN

(CONTINUED FROM PAGE 100)

The tire shop is responsible for all pneumatic tires on the three types of equipment sent to Damon. All tire service calls are also handled here. Tire maintenance runs very high, because of the hard use given the trucks and the poor condition of some roads. Synthetic tires are holding up well but synthetic tube failure is high.

The Damon organization is interesting because of the great variety of equipment maintained, but it presents an even more interesting study in race relations. More than 500 men are employed here, all civilians, under the supervision of Navy officers. These men are typical of what is found in Hawaii—whites, negroes, Hawaiians, Portuguese and Filipinos—all working together to make the Damon Shops one of the smoothest operations at Pearl Harbor.

## FREE PUBLICATIONS

(CONTINUED FROM PAGE 58)

valves and cylinders, a camshaft position chart and a set of recommended valve tappet clearance tables for the V-8 engine.

Special tools recommended for each job have been illustrated for the convenience of the mechanic. A copy will be sent to anyone writing L15 on the free postcard.

### L-16. Oil Recommendation Chart

A large 14½ x 30-in. oil recommendation chart combined with a 9½ x 4½-in. calendar has been made available to the fleet operator and shop man as a handy reference in the lubrication of trucks, tractors and passenger cars.

Listed on the chart are 17 popular truck makes, with all the newer models of each, showing the proper quantity of oil for crankcase, transmission and differential. Recommendations for most tractors are given as are those for 26 makes of passenger cars.

Tacked to the wall of the service department, this guide will afford ready information for proper lubrication. Write L-16 on the postcard for a copy.

END

(Please resume your reading on P. 59)

Skid makes with a magnet

...he doesn't know

**GRAFIELD**  
BRAKE LININGS

will stop 'em!

For Skid's money, a magnet is as good as a brake. For your customers' money, however, give 'em GRAFIELD! In split-second spots, where braking must be bulldog-sure yet kitten-gentle, rely on GRAFIELD. Get in line — reline with GRAFIELD.

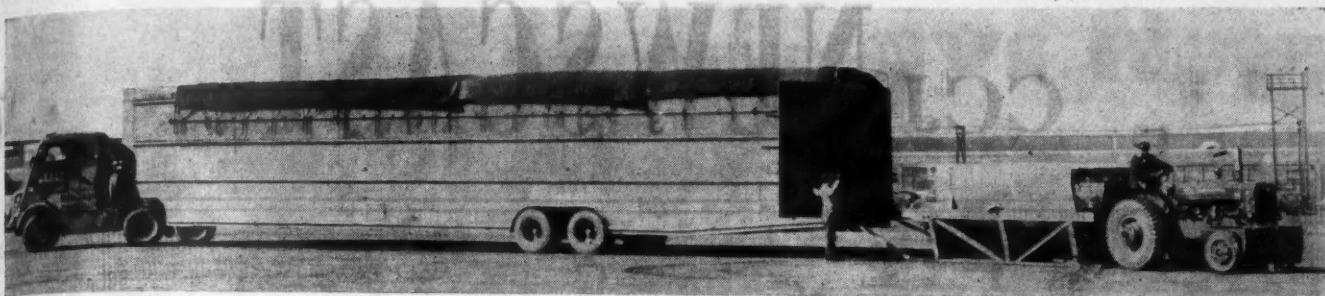
WORLD BESTOS CORP.

PATERSON • NEW JERSEY

J. D. Courtright has been named manager of the Kansas City branch of the White Motor Co.



This convoy took the first Lockheed P-80 Shooting Star from Burbank, Cal., to Wright Field, Dayton, Ohio for testing. Twelve feet were added to the length of the big Fruehauf van so that it would carry the sections of the plane. All identification marks on the convoy were obliterated so that curious persons enroute could gain no idea of the high-priority cargo.



Top. The "Delivery Dachshund", a truck-trailer 64 ft. 9 in. long, 8 ft. 6 in. wide, used in hauling plane sections. Above. The Curtiss (C-46) Commando world's largest twin-engine transport plane

**S**NOW'S piling up fast here and the roads are clogged. I don't know if I can get through, but I'm trying!"

The driver of a big trailer-truck full of Commando assemblies for Curtiss-Buffalo was reporting by phone to the plant's traffic department. It was during one of the worst storms in the Buffalo area's record-breaking winter, and the men at the plant knew the going was rough.

"Where am I? I'm just inside Conneaut, Ohio. Yeah, I know this stuff has got to get through, but the roads are almost closed and it's slow going."

Several hours later snowplows from the Buffalo plant were fighting their way closer and closer to Conneaut, through deep snow, whirled into big drifts by a high wind. Through Westfield, Erie and Girard they battled their way, plowing their own path as they went. At last they reached the truck with its precious war cargo.

Without rest, the plows turned around and, clearing the drift-clogged highways, convoyed the big truck into the Buffalo plant.

Regardless of weather conditions, the huge fleet of trucks serving the Airplane Division plants gets through some way and usually on schedule. The above incident is but one of numerous instances of the way the elements

## Trucks Save Time, Money Moving Plane Assemblies

**One Curtiss-Wright plant saves 15 days on**

**one run, another saves \$1,000,000 in one**

**year, hauling plane assemblies by trucks**

### TRAILER COST AMORTIZED

### AFTER FOUR TRIPS

"Here is a typical cost comparison at Curtiss-Buffalo; it's for transporting one C-46 lower after section from Loudonville, Ohio. Cost by rail is \$134.55; cost of crating when moved via rail, \$259.55; rail transit time, three days.

"Cost when moved via special truck, \$150; cost of converting the trailer to haul the section, \$400; truck transit time, one day. Saving to the Division totals \$109.55. It is figured that the cost of the specially constructed trailer will be amortized after four of the C-46 lower aft sections have been transported by this means."

are conquered by the men who drive those trucks over a vast network of highways to deliver the assemblies and parts necessary to meet the production schedules of the mighty Helldiver and the mammoth Commando.

Every day, trucks, large and small, are whirring along at a steady pace from the four corners of the country to converge on Curtiss plants at Buffalo, Kenmore, Louisville, St. Louis and Columbus.

(TURN TO PAGE 123, PLEASE)

# CCJ NEWSCAST

## Beverage Bottlers Need 20,000 Trucks, 100,000 Tires

Soft drink manufacturers plan the expenditure in the first postwar year of more than \$50,000,000 for the construction of new plants, remodeling of present establishments and the replacement of worn-out equipment, John J. Riley, secretary of the American Bottlers of Carbonated Beverages, reports.

"The industry will have to replace about 50 per cent of the 40,000 delivery trucks now in service and will need 100,000 new tires for other trucks as soon as the supply situation will permit," he said.

## Accident Forms Available for Private Carriers

The National Council of Private Motor Truck Owners, Inc., with the approval of its Safety Committee, has printed and stocked a limited supply of the 4 x 8-in., four page Vehicle Accident Reports, suitable for use by all drivers engaged in private motor vehicle operations.

These forms are being made available to members through Council headquarters. In lots of 100, the price is \$2; in lots of 500, price, \$7.50; and in lots of 1000, the price is \$12.50.

## Fruehauf Builds Sales-Service Branch in Kansas City

Construction of a new sales and service branch for the Fruehauf Trailer Co. has been started on a 5-acre tract of land near Kansas City, Mo. In charge of operations as branch manager will be Walter Siegrist. R. R. Harrison will continue to supervise and be in charge of all sales activities. F. J. Wolfe will be service manager.

## Chas. E. Doling Joins Reo

Charles E. Doling, former chief of production of the Army Service Forces under the direction of Philadelphia Ordnance District, has joined Reo Motors, Inc., as sales man-

ager of Philadelphia branch territory. Mr. Doling was associated with Auto-car Sales & Service Co. for a period of 14 years prior to his joining the Army Service Forces in 1942.

Following the acceptance of his resignation by Philadelphia Ordnance district, Mr. Doling received a Certificate of Merit and a letter of commendation from Lt. Col. A. D. Kelso, district chief.

## Marmon-Herrington Enters Transit Field

Marmon-Herrington Co., Inc., of Indianapolis, is entering the transit equipment industry with a line of trolley coaches designed under the direction of Charles Guernsey, who has been elected a vice president of the company and manager of the Transit Equipment Division.

The first production will be on 40 and 44 passenger models. Other types and sizes will be made as the need develops. Many new features of practical construction, comfort and convenience in operation have been incorporated into the new coaches by Mr. Guernsey.

## Auto-Lite Offers Awards in Fleet Safety Contest

Chronograph wrist watches or combination hygrometer, barometer and thermometer desk sets will be awarded as prizes to winners of the 1945 fleet safety contest sponsored by The Electric Auto-Lite Co. in conjunction with the American Trucking Associations.

For 11 years the Spark Plug Division of Auto-Lite has cooperated with the ATA in promoting safe driving among fleet operators. Awards, which include a special citation, are presented to 16 individuals responsible for the fleet's safety record.

## 36,648 Vehicles Released in July

A total of 36,648 vehicles were released under the truck rationing pro-

(TURN TO PAGE 108, PLEASE)

John A. Tenborg has been named Chicago branch manager for the White Motor Co.



Robert D. Hiltz has returned to executive duties at Reo Motors, Inc., as assistant general sales manager



E. R. L. Boyd has been appointed divisional sales manager of the western states for the Wausau Motor Parts Co., Wausau, Wis.



Stanley F. DeVore has been appointed manager of the St. Louis branch of the White Motor Co.



E. M. Schulthesis has been appointed manager of automotive sales for Clark Equipment Co.



Appointment of John J. Byrne as bus sales manager of Mack-International Motor Truck Corp., Central division territory, has been announced



# SERVICE is Always Near for MIDLAND Equipment



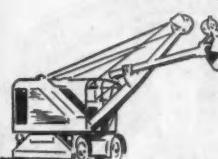
**MIDLAND**  
AIR and VACUUM  
POWER BRAKES  
for All Trucks and Buses



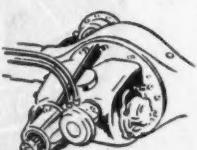
**MIDLAND Door Control**



**MIDLAND**  
Power  
Shovel  
Control



**MIDLAND**  
2-Speed Axle  
Control



You will seldom if ever need emergency service for any Midland equipment whether power brakes on trucks or buses, or the control on a power shovel, two-speed axle or bus door. But the fact that Midland has one or more fully equipped distributors in key cities all over the country assures you fast, satisfactory service if an emergency does occur.

Midland products plus Midland service is a dependable safeguard for your equipment wherever it may be rolling or in operation.

**THE MIDLAND STEEL PRODUCTS CO.**

10605 MADISON AVENUE • CLEVELAND 1, OHIO

Export Department: 38 Pearl Street • New York City

NOTE: A newly acquired plant makes it possible for us to consider the postwar manufacture of a few items in household or office appliance, automotive or mechanical fields, in small or medium size fabrications. We invite inquiries to MIDLAND NEW PRODUCTS DEPT., at the above address.

# MIDLAND

## AIR and VACUUM POWER BRAKES

DOOR CONTROLS • POWER SHIFT • POWER SHOVEL CONTROL

## CCJ NEWSCAST

(CONTINUED FROM PAGE 106)

gram during July, as compared with 31,707 in June, the War Production Board has announced.

Civilian users received 7903 light trucks, 14,618 medium trucks, 2577 heavy trucks and 2037 trailers, a total of 27,135. Holders of Government exemption permits for Government use and export received 516 light trucks, 7851 medium trucks, 966 heavy trucks and 180 trailers, a total of 9513.

## Maremont Shifts Sales Staff

Maremont Automotive Products of Chicago announces the following changes in its sales staff: Kenneth James has been transferred to territory No. 10, covering the northern half of Illinois, Wisconsin and upper Michigan. Joe Brownell has been transferred to territory No. 7, covering most of Ohio, West Virginia, northern Kentucky and south-eastern Indiana. Tom Roach has been appointed district representative in territory No. 19, covering lower Mich-

igan and northern Ohio. Kenneth Maxwell has been appointed district manager of territory No. 12, covering Missouri, southern Iowa, southern Illinois and southern Indiana.

## 30,000 Trailers Scheduled for First Half of 1946

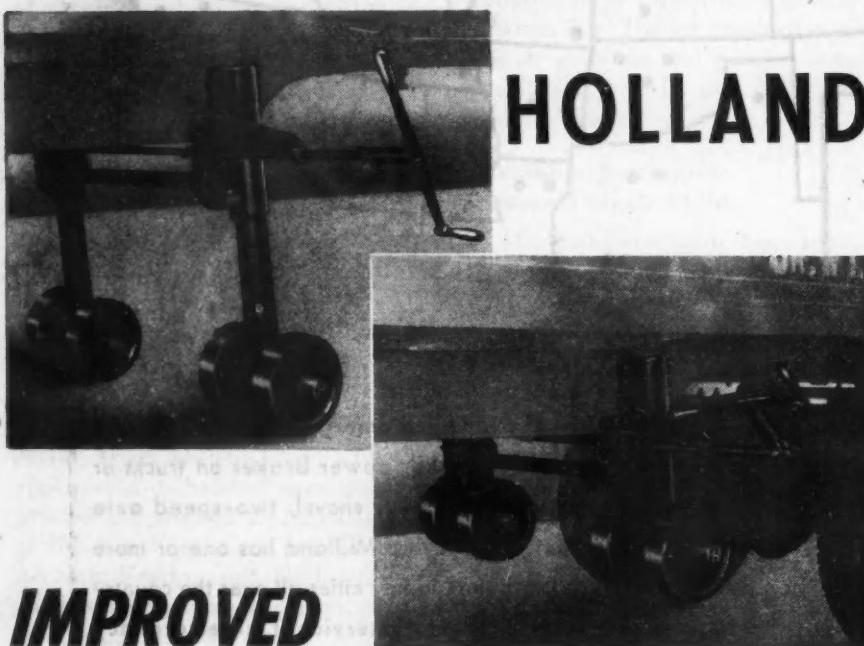
A total of 30,000 trailers, 15,000 per quarter, has been programmed for the first half of 1946. The number of trailers offered each manufacturer represents 150 per cent of his average quarterly production during the base years, 1939, '40, '41.

A total of 97,816 truck-trailers was produced in the first six months of 1945, according to a recent WPB "Facts for Industry" report. This figure compares with 77,669 produced in the second half of 1944, or a gain of 20,147 truck-trailers. These figures are based on reports from 180 trailer manufacturers.

## Bowers Leases Boston Building

The leasing of a modern 4-story concrete factory and office building in Boston has been announced by C. P. Bowers, president of the Bowers Battery and Spark Plug Co. The building will be used for manufacturing and warehousing to serve the New England territory.

(TURN TO PAGE 160, PLEASE)



## IMPROVED

## Vertical Lift LANDING GEAR

### The Nationally Known and Approved Standard

Load Lifting Power unequalled by any other type.

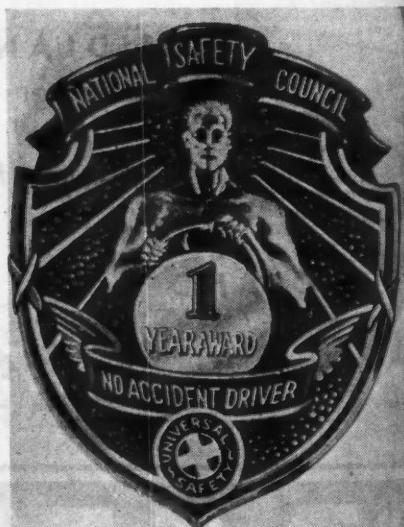
18" ground travel clearance—6" more than others.

Safe—Simple—Durable  
Fast and Easy.

Features are engineered into the Holland V-400 Vertical Lift Landing Gear which make it the choice of those most experienced in truck and trailer operations. Its tremendous lifting power, with speed and ease, is matched by its great safety, simplicity, and durability. Made by the makers of the well-known Holland Fifth Wheel and Holland pintle and couplers.

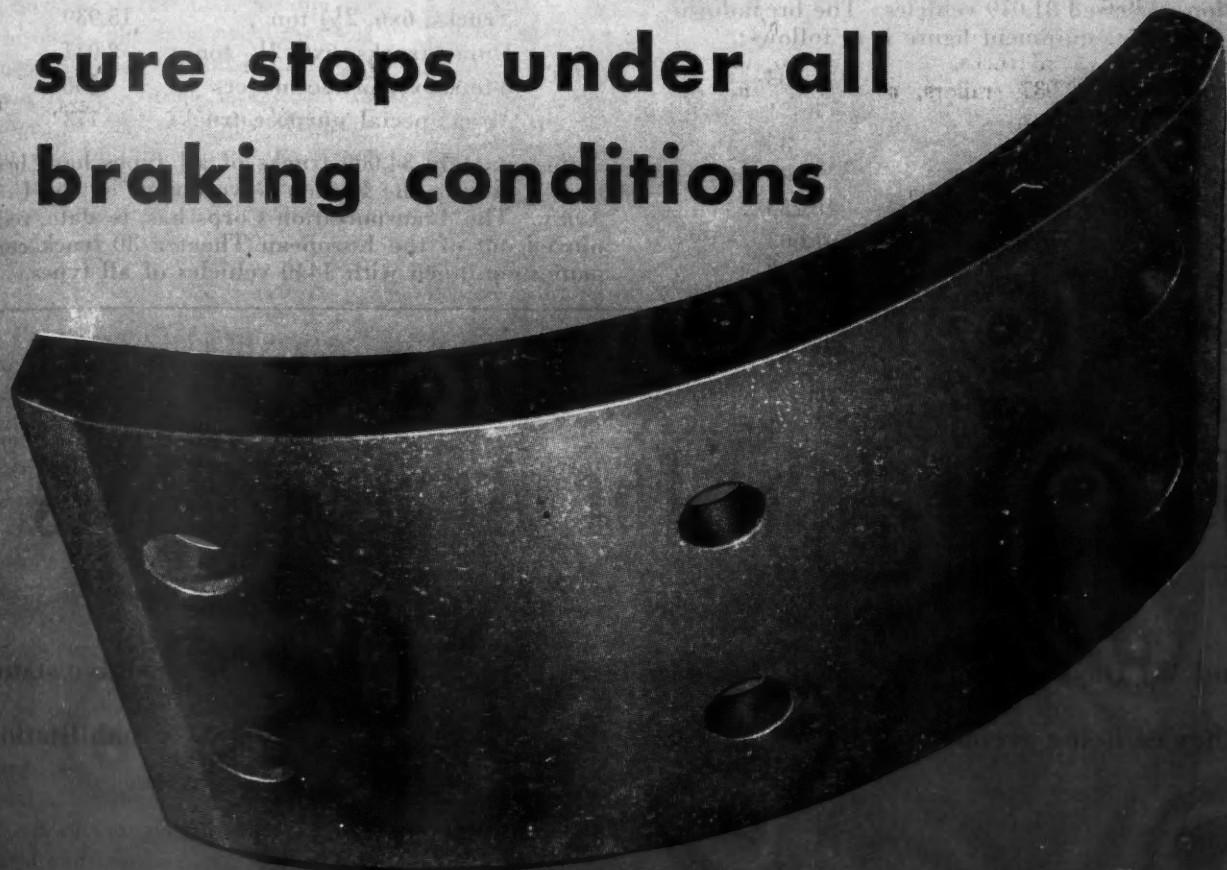
ENGINEERED BY

**HOLLAND HITCH COMPANY**  
HOLLAND, MICHIGAN, U. S. A.



First of the new-type, metal Safe Driver Awards have just been issued by the National Safety Council. All drivers who have had no preventable accidents for 12 months or longer, and whose fleets are enrolled in the Council's Safe Driver Award Plan, will receive the gold-plated badges. The driver with a record of nine perfect years of driving was Walter A. Smith. Smith drove 25,892 miles last year, and his 9-year driving record is estimated at about half a million accident-free miles.

**Engineered to give safe,  
sure stops under all  
braking conditions**



*American*  
**Brakeblok**

TRADE MARK REG. U.S. PAT. OFF.

**HEAVY DUTY  
BRAKE LINING**



*Stopper says -*

"The engineers who developed these good brake linings provide a Free Advisory Service for maintenance men who have tough brake problems."



38 strategically located warehouses, and jobbers everywhere maintain stocks of American Brakeblok materials.

AMERICAN  
**Brake Shoe**  
COMPANY

**American Brakeblok  
Division  
DETROIT 9, MICHIGAN**

## FIRST ARMY ALONE HAD 81,019 VEHICLES

According to the final release of equipment figures for the First Army in the ETO, for example, this organization possessed 81,019 vehicles. The breakdown of this immense equipment figure is as follows:

Repair trucks	1,103
Ambulances	1,031
Passenger cars	85
Semi-trailers, 6-10 ton	636
Trailers, 1/4 to 1-ton	18,253
Jeeps	31,603
Command reconnaissance cars	1,173

Weapons carriers	6,491
Trucks, 6x6, 1 1/2 ton	1,600
Trucks, 6x6, 2 1/2 ton	15,939
Dump trucks, 6x6, 2 1/2 ton	2,041
6-ton, 6x6, prime movers	266
Misc. special purpose trucks	773

Approximately 34,000 trucks of all types have been turned over to the French Government by the U. S. Army. The Transportation Corps has, to date, redeployed out of the European Theater 30 truck companies equipped with 1440 vehicles of all types.

# Postwar Jobs for Army Trucks

**V-E and V-J Days put several hundred thousand Army trucks on a temporarily inactive status.**

**Now they're being reconditioned for further services; FEA using 100,000 for rehabilitation.**

WHEN the Nazi war machine was crushed, guns stopped firing, bombs stopped bursting, but Army trucks had to carry on. Troops and prisoners had to be moved, food and other essential supplies kept flowing. Then, according to plan, trucks were redeployed to the Pacific theater—until Japan was blasted into surrender.

The war is over but still the trucks keep rolling. Some are moving our troops from debarkation ports to occupied areas, others feed supplies. Already the Foreign Economic Administration has taken over 100,000 for rehabilitation purposes. Lend-Lease arrangements have disposed of many more.

### Reconditioned Before Reuse

THERE'S an interesting behind-the-scenes story dealing with the conditioning of trucks before their reassignment. Each vehicle was carefully checked and reconditioned, if needed, before redeployment. There were problems of preparing them for shipment so that they would take as little space as possible.

An interesting, detailed report on the procedures and problems involved in the redeployment of trucks was prepared by Staff Sergeant Glenward S. Blomme before V-J Day. While truck redeployment, en masse, to the Pacific theater has stopped, the other information gives such an interesting picture of Army truck maintenance and operation, that Sergeant Blomme's report is published in full.

### Truck Redeployment Problems

HEADQUARTERS, ARMY TRANSPORTATION CORPS, EUROPE—Thousands of general all-purpose vehicles used by the U. S. Army combat and Service Forces in the Battle of Europe are now being readied for shipment to the Pacific.

Hundreds of battle-tried and hardened campaigners, which aided in the crushing defeat of the German military juggernaut, are daily leaving the European Theater enroute to Pacific battlefields. Trucks used by advancing armies to transport troops, ammunition and other vital supplies are undergoing final repairs and packing by members of Ordnance groups. Vehicles which rolled through storm, snow, blackout and shell-fire over the Transportation Corps' famous supply routes—Red Ball, White Ball, ABC (American, British, Canadian) Green Diamond and XYZ—will eventually roll again over coral highways on faraway picturesque islands.

Immediately upon the announcement of VE-Day, the process of redeploying men and vehicles began. The initial flow of the many thousands of vehicles has already started through a rigid process of inspection, repair and

by S/SGT. GLENWARD S. BLOMME

Headquarters, Army Transportation Corps

packaging, crating and marking which will protect them on the long trek to the Pacific. More than 250,000 general purpose vehicles, which include trucks of all sizes and types are involved. The plan for the redeployment of these vehicles was mapped out many months before the "cease firing" order was given in Europe. A reserve supply of equipment will be built up in the states and at depots in the Pacific area for use of the combat unit which will be redeployed through the United States.

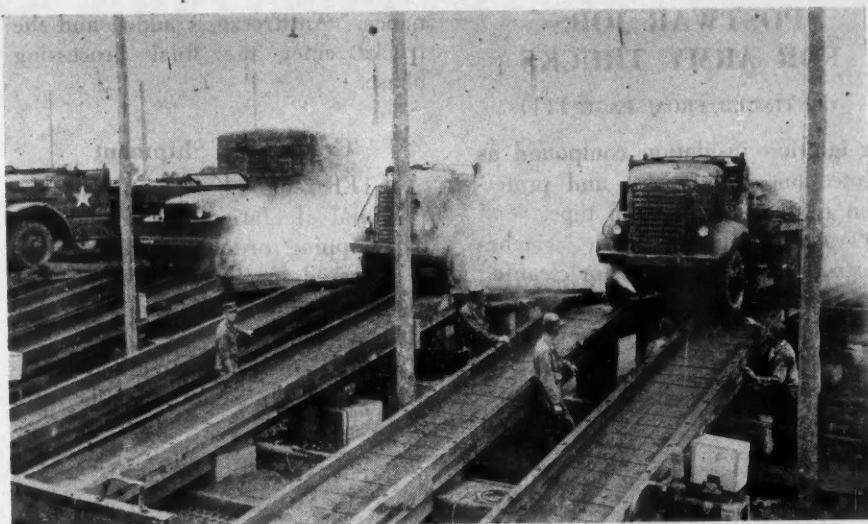
#### Preparation for Shipment

GENERAL purpose vehicles or equipment which will not accompany the troops are turned into collecting points which have been designated as such by the Assembly Area Command in the Rheims area of France. When the vehicles are brought into the collecting points they are screened, classified and sent to shops or depots equipped to apply the type of maintenance necessary to put the truck into condition. Should the vehicle require first or second echelon maintenance, it is carried to a redeployment depot, near the port of embarkation where it is cleaned and repaired and readied for shipment. Vehicles which require third or fourth echelon maintenance are shipped to shops adequately fitted to accomplish the type of repair required.

Upon arrival of the general purpose vehicles from collecting points and from maintenance and repair depots, they are stripped of all tools and accessories and the tires are checked. All vehicles shipping to the new theater of war are equipped with new tires when available. As the supply of new tires is used up, rebuilt and repaired tires are used.

When the trucks leave the tire checking section they are placed on a production line wash rack and given a thorough washing and steam cleaning. Next they go to the painters, who touch up the vehicles and restencil insignias. The processing also includes spraying hardware,

(TURN TO NEXT PAGE, PLEASE)



Volumes of steam pour from the undercarriages of the trucks as three Ordnance technicians observe POW's cleaning them for inspections and shop work



The final stage of greasing and lubrication. The vehicles are then stored in unit parking areas awaiting orders for final water and weather proofing



Sgt. Lewis Myers, in charge of the initial stage of processing of out-going vehicles being shipped to the Pacific Theater. Normally 40 POW's do the work

European Theater of Operations

## POSTWAR JOBS FOR ARMY TRUCKS

(CONTINUED FROM PAGE 111)

an ignition insulation compound as protection against rust and protection of instruments with tape.

Trucks equipped with winches move to another section for cleaning and greasing with a special preservative. All vehicles then move to a large shop for a thorough check-up and first and second echelon mainte-

nance. Antifreeze is added and the trucks enter the final processing phase.

### Crating for Shipment

AFTER repairs have been made the kind of crating is stipulated on the shipping order and the vehicle is prepared for shipment either disassembled and boxed or intact on wheels.

The manner of crating has been worked out in minute detail, with

the main idea, that of saving shipping space. Also, safer delivery of equipment under all kinds of climatic conditions is assured by crating an entire vehicle in a single case, together with all spare parts and necessary equipment. The process is known as the Single Unit Pack and requires the reduction of the vehicle to its minimum height. To accomplish this reduction the cab and windshield are both removed and the wheels are taken off. End wires are given added security by the use of extra tape and terminals are greased as a safety precaution against seawater, humidity, and excessive heat. The largest crated vehicle, the 2½-ton, truck, weighs 13,000 pounds, and the Jeep, 2,700 pounds.

The Single Unit Pack will save great cargo space. Contemplating the movement of vehicles to the Pacific theater, consisting of 17,956 general purpose vehicles, the measurement tonnage has been estimated at 233,823. If these vehicles were shipped set up on wheels, they would have required 321,572 measurement tons, approximately 90,000 measurement tons over the same shipment crated. This would mean that 11½ Liberty ships would be needed to carry the wheeled vehicles. Of the 17,956 total, 16,454 vehicles, including 3211 Jeeps, 3746 one-ton trailers, and 2779 two and one-half ton trucks, were earmarked for crating and the remainder, 1502 consisting of trucks of four tons and over, were to be shipped on wheels.

Operations are on an assembly line basis at the disassembly and crating points, which greatly expedites the processing at redeployment depots. A typical Vehicle Redeployment Depot is located at Hofstade, Belgium, which has been assigned the task of supplying general purpose and combat vehicles to outgoing ships in the great port of Antwerp.

Two ports have been assigned the task of handling redeployment of vehicles—Antwerp and Marseilles. The former installation will be the largest shipping point while the latter is the main port of embarkation for troops and units headed directly for the Pacific. Another two processing areas are located in the United Kingdom and have been assigned the job of redeploying 40,000 vehicles within the next six months.

(TURN TO PAGE 116, PLEASE)

### Better Repair Means Longer Wear!

#### Knock-Out A-C ARC WELDERS

During these days when repair and maintenance mean so much to the individual and to the nation, you can't be too careful in selecting equipment that is proven and dependable.

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**GIVES BETTER AND SMOOTHER  
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### **WHAT CASITE DOES ALL THE TIME —**

- Reduces formation of sludge and gum.
- Frees sticking valves and rings.
- Carries oil to close tolerance areas.

### **AND IN WINTER —**

- Retards congealing of oil.
- Gives quick starting, even below zero.
- Speeds up lubrication on cold starts.

● Clean motors are strong motors. Knock out power-killing sludge and gum with Casite! It's the quick, easy way to free sticky valves and rings, reduce sludge and improve lubrication.

Use Casite in the crankcase every oil change and through the air intake of gasoline motors every three months—a pint for all passenger cars and small trucks; 10% of crankcase capacity for all others.

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SIMPLICITY  
Only a few flexible wires. Nothing to freeze, get knocked off, or chatter . . . No complicated mechanisms.



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WHEN a driver of a big tractor-trailer outfit lacks confidence in its old-fashioned braking system, and gets the habit of "jamming on the brakes" to slow up or stop — it means plenty of wear and tear on tires, braking mechanisms and rolling stock. And often an emergency which calls for such drastic application of brakes results in major damage due to accidents.

The proved way to AVOID all these situations, is to equip with Warner "Vari-Load" Electric Brakes — with braking power under instant and complete control at all times. Drivers can pre-set the brakes on the trailer to fit both road and load conditions. Thus all stops — emergency as well as run-of-the-road — can be made confidently and without undue strain on the driver or equipment . . . protecting himself and cargo, and preventing loss of time spent on maintenance work, or costly delays due to wrecked equipment.

On all future trailer purchases, specify Warner "Vari-Load" Electric Brakes — world-famous for safety, simplicity, and dependable, efficient, trouble-free performance.

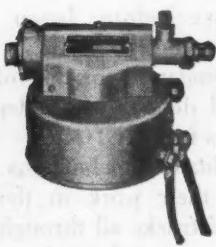
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BRAKING POWER**



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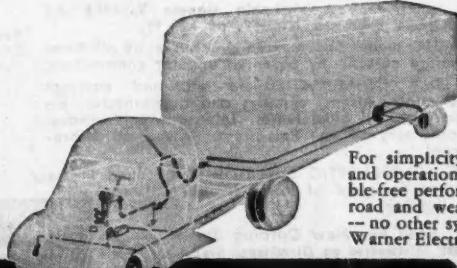


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NOW AVAILABLE FOR PRESENT  
TRAILERS HAVING WARNER  
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BOTH TRACTOR AND  
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The new Warner Controller—simple and compact—synchronizes the hydraulic brakes on tractor with the Electric Brakes on trailer. The tractor's regular foot pedal operates both braking systems. This development creates smooth foot-touch tractor-trailer braking under all conditions—eases driving strain—assures greater safety. Controller is easily and quickly fitted into hydraulic brakeline. See your Warner dealer about changing over your present equipment.



For simplicity of installation  
and operation—for safe, trouble-free performance under all  
road and weather conditions  
—no other system can match  
Warner Electric Brakes

**WARNER  
ELECTRIC BRAKES**

## POSTWAR JOBS FOR ARMY TRUCKS

(CONTINUED FROM PAGE 112)

In the center of the Port of Antwerp is a huge assembly plant of the Ford Motor Company where the final phase of processing takes place. This involves a number of steps, among them the taping of all openings, the spraying of engines and hood interiors with rustproof compound and lubrication and greasing of parts. Following this procedure

all vehicles of 2½-tons and under are crated. Larger trucks are placed aboard ship and given additional treatment due to their extra exposure on the open decks.

### First Army Had 81,019 Vehicles

FROM all indications the U. S. Armies fighting in the Pacific will be equipped with many more trucks and other vehicles than the armies which battled in the European theater. According to the final re-

lease of equipment figures for the First Army in the ETO, for example, this organization possessed 81,019 vehicles.

The breakdown of this immense equipment figure is as follows:

Repair trucks	1,103
Ambulances	1,031
Passenger cars	85
Semi-trailers, 6-10-ton	636
Trailers, ¼ to 1-ton	18,253
Jeeps	31,603
Command reconnaissance cars	1,173
Weapons carriers	6,491
Trucks, 6x6, 1½-ton	1,600
Trucks, 6x6, 2½-ton	15,939
Dump trucks, 6x6, 2½-ton	2,041
6-ton, 6x6, prime movers	266
Misc. special purpose trucks	773

Approximately 34,000 trucks of all types have been turned over to the French Government by the U. S. Army. The Transportation Corps has, to date, redeployed out of the European Theater 30 truck companies equipped with 1440 vehicles of all types.

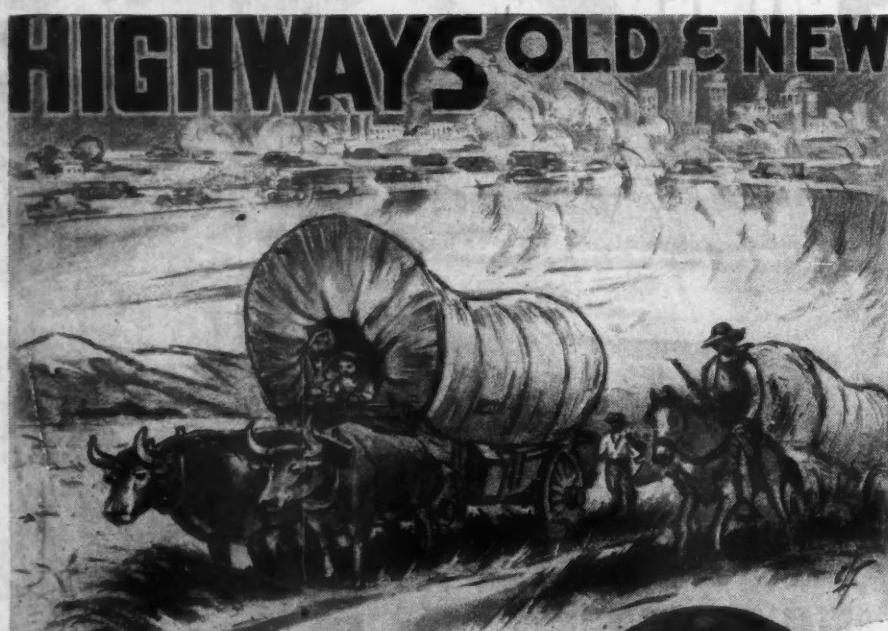
The Transportation Corps operated as high as 12,480 vehicles during the course of the European War. The size of the trucks ranged from 2½-tons to 45 tons and were operated by 257 companies. There are now 14 diesel companies operating out of Antwerp to Charleroi, Verdun and Mons, France, hauling supplies consisting mostly of Quartermaster One, or subsistence. Eighteen companies are operating in the Assembly Area Command at Rheims, France, hauling supplies and taking care of various housekeeping duties. Other units are doing port clearance and depot clearance work throughout the European Theater.

### Additional Data

EIGHT days before Japan surrendered, Eugene Hardy, CCJ War Correspondent, sent the following additional data on the redeployment of trucks in the ETO:

Army Ordnance technicians are speeding up their work in the redeployment of trucks all through the European Theater of Operations. In the Ford plant at Antwerp, where more than 35,000 general purpose vehicles were assembled for use by American forces in the European campaign, Belgian civilians, under Ordnance supervision, are disas-

(TURN TO PAGE 120, PLEASE)



## Teleoptic DIRECTIONAL SIGNALS

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Clear, positive, unmistakable signals VISIBLE AT ANY ANGLE DAY OR NIGHT, at 125 ft.

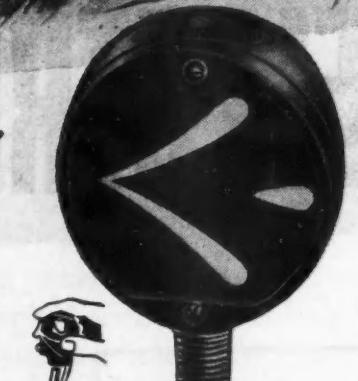
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## POSTWAR JOBS FOR ARMY TRUCKS

(CONTINUED FROM PAGE 116)

sembling, processing and crating battle-used trucks and trailers for redeployment to the Far East.

While operations are not yet in full swing, the plant, located in the heart of the Antwerp dock area and little damaged by V-2 bombs, is expected soon to process around 400 crated vehicles a day.

For this huge job of crating all trucks of 2½ tons and under, the two officers in charge of the operation have ordered more than 10,000,000 sq. ft. of ¾-in. board, to be used for tops and bottoms of crates, and nearly 50,000,000 ft. of lumber of various sizes needed for cross pieces and supports. Some of the lumber being used has been saved from the original crates when the trucks were first unloaded at Antwerp.

The Ordnance Delat Base Section is currently preparing hundreds of vehicles daily which will pass through the port of Marseilles in Southern France on their way to the Pacific.

Ordnance shops are also modifying the "Dragon Wagon," heavy tank transporter, to carry the new 45-ton General Pershing tanks over the roads to Japan. Wider tracks on the new tanks call for wider ramps and additional support on the transporters.

## NEW FRAM FILTER

(CONTINUED FROM PAGE 96)

the Ford cab-over-engine trucks up to 1941 and another for those of 1942. There is another "special" for all Ford 6-cylinder trucks. Still others among the tailor-fitted types are available for Chevrolet trucks as well as for Dodge and Plymouth trucks.

Other new items in the line this fall include the K-36 kit, a complete package for all Fords and Mercurys, up to late 1941, serving a double purpose. It constitutes a changeover kit for converting existing installations to front-end return, and contains two flexible lines which permit a complete replacement for any Ford installation.

END

(Please resume your reading on P. 98)

## Fruehauf Rejoins Truck-Trailer Assn.

The Fruehauf Trailer Co., Detroit, has rejoined the Truck-Trailer Mfg. Assn. L. C. Allman has been named by Fruehauf as chief liaison man in connection with association activities.



Whether your vehicles be old or new — the important thing is to get more miles out of each one. You can have those extra miles, yet operate your trucks or cars with surprising economy. How? . . . Controlled speed.

Hoof Governors provide the controlled speed that saves tires, gas, repairs — and prolongs the useful life of each vehicle. Your local jobber is prepared to serve you.

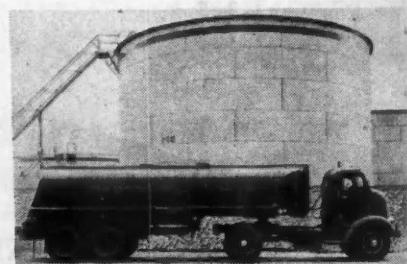
### Send for this Manual!

It contains, among other data, road speeds and corresponding engine speeds, according to various tire sizes and axle ratios.

HOOF PRODUCTS COMPANY  
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# HOOF FULL POWER GOVERNORS



The first aluminum trailerized petroleum transport tank ever built is still in daily service for Refiners Transport Co., Detroit, Mich. It was designed and produced by The Heil Co., Milwaukee, in 1941 and has covered over 250,000 miles running from terminals to bulk plants. Besides eliminating all possibility of rust or scale, the aluminum tank decreases dead weight sufficiently to permit carrying a payload of 5500 gals. against the 5100 gal-load carried by a comparative high tensile steel tank.

## TRUCKS SAVE TIME MOVING ASSEMBLIES

(CONTINUED FROM PAGE 105)

Traveling carefully picked routes are the trailers, a great majority of which were designed by the Airplane Division traffic experts, developed to reduce transportation time, effect financial savings and to eliminate as much crating as possible to conserve critical lumber and man-hours.

### Trucking Faster and Cheaper

**TRANSPORTATION** by truck of big and bulky articles supplements shipments by rail, but it has been found that transporting these articles the trailers in many cases make their trips faster and cheaper than railroad freight cars.

Like the time at Columbus when the Navy notified the plant some important Helldiver spare parts had to be delivered within four days to a west coast base, before a certain carrier sailed for the Pacific war zone.

The parts were too heavy for air travel, and a freight train would be too slow. A non-stop truck trip was the only answer, but high speed non-stop truck trips can't be dreamed up overnight.

After much telephoning, a transcontinental trucking company located one of its trucks in Illinois, on the way East from the coast. Arrangements were quickly made to meet the truck at Columbus, transfer its load for the east to another van, and start the truck west again with its Helldiver parts. Police departments in all cities en route were notified, so a motorcycle escort could meet the truck on the outskirts and rush it through town.

For four days, the traffic department anxiously followed the progress of that truck across the country. Within 96 hours the load was on the waiting carrier, and the carrier was on its way out to sea.

Mileages traveled by the trucks reach astronomical figures. The vehicles operating in and out of Buffalo travel over a million miles a month, hauling lower forward fuselage sections from Chicago; lower aft fuselage sections from Loudonville, Ohio; fins from Amityville, L. I.; nose sections from Philadelphia and Fort Worth, Tex.; stabilizers from Long Island City; rudders and ele-

vators from Middletown, Ohio; outer panels from New Orleans, Robertson, Mo., and Akron, Ohio. At Curtiss-Columbus, trucks rolled up a total mileage of 566,984 last year transporting the center panel for the Helldiver alone, while three fleets of trucks traveling 165,000 miles each month over three routes totaling 1575 miles feed Commando sub-assemblies from Detroit to Curtiss-St. Louis and carry St. Louis-made major assemblies to the Buffalo and Louisville plants.

### "Delivery Dachshunds"

**B**ECAUSE of the Commando's size, huge trailer-trucks are required to haul its component parts. "Delivery dachshunds," long, lean truck-trailers with a capacity of almost 2½ box cars, make daily runs into the Kenmore plant hauling fuselage sections from the Char Gale Company at St. Cloud, Minn.

The 10-wheeled giants, operated by the E. & L. Trucking Lines of

(TURN TO NEXT PAGE, PLEASE)



#### ★ Care in Driving

#### ★ Care in Maintenance

#### ★ Care in Selecting Ignition Parts

It may be longer than you think until new trucks are again available. Make the most of your present equipment by careful operation, careful check up and repair, and the careful choice of ignition parts.

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APPROVED QUALITY PRODUCTS

## TRUCKS SAVE TIME MOVING ASSEMBLIES

(CONTINUED FROM PAGE 123)

Dearborn, Mich., owned by the U. S. Army and driven by drivers sworn in as members of the Auxiliary Military Police, are 64 ft. 9 in. in length, 8 ft. 9 in. in width, and 12 ft. 8 in. in height. They compare with the average box car, which is 40 ft. 6 in. long, 8 ft. 6 in. wide, and 8 ft. 7 in. high.

The Leviathans, one of which reaches the Kenmore plant daily, require an hour and a half to load, and from 20 to 30 minutes to unload. The St. Cloud-Kenmore run requires four days for the 2200-mile round trip. Two drivers alternate on the trip which takes 33 hours one way.

Measuring 39 ft. in length and 13 ft. 10 in. in height at one end, the outer panel is one of the biggest pieces of the Commando and is believed to be one of the largest single

wing units developed in American aviation production. Despite their size, they're transported from the Higgins Aircraft Corp. plant at New Orleans, the Curtiss-Wright Corp. plant at St. Louis, and the Firestone Aviation plant at Akron, Ohio, in special trailers designed in cooperation with the U. S. Aeroplane Carriers, Inc., of Dover, Del., to Curtiss specifications.

### Trucks Save 15 Days

AS A RESULT of this Curtiss development, each trailer is capable of delivering one set of panels from Higgins Aircraft to Buffalo, a distance of 1500 miles, in six days, as compared to 21 days' minimum travel on railroads.

Trailers serving the St. Louis plant cover three routes. Floor sections of the C-46s, made in Detroit, are of such size they cannot be contained in any existing closed-type railroad car. The trailers used are equipped with overhead rails much like those in a meat cooling room of a packing plant. The floor sections are suspended from the ceiling of the trailer and are then secured to channels in the floor to prevent swaying. The 554-mile trip requires 20 hours.

Outer panels are moved to Buffalo in trailers which have greatly accelerated the flow of these units and have relieved the overload rail transportation system. The 750-mile journey is usually made in 36 hours, one-third of the time required by rail shipments in extra-long cars, also used to supplement the trailer shipments.

IT TAKES four trailers to move the major assemblies of one Commando from St. Louis to Louisville, the vehicles making the 275-mile run in 12 hours. One carries the two outer panels, another the center panel and the other two carry sections of the fuselage.

Down Louisville way, they had to clear the highways for the most unusual load carried by tractor-trailer — a center section with nacelles attached for the first C-46 made by the "St. Louisville" production team. The load was 13 ft. 9 in. wide. It was escorted by relays of highway patrols all the way from St. Louis to Louisville, as two-way traffic was im-

(TURN TO PAGE 126, PLEASE)

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for ECONOMICAL, SAFER and EASIER CLEANING

CONTINUOUS FILTERING PROLONGS EFFICIENCY of CLEANING COMPOUND

COLD WASHING PROCESS ELECTRICALLY OPERATED

WORKING SPACE 12" DEEP

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Solve the PARTS-CLEANING PROBLEM in YOUR SHOP with the Kleer-Flo MECHANICAL PARTS CLEANER

Handles large or small parts. No splashing. No loss of small parts. 20-gal. tank. Low cost multi-purpose unit, always ready, no heating. Saves time, labor and cleaning compound. Removes mechanics' objections to cleaning dirty parts.

Available ACCESSORIES

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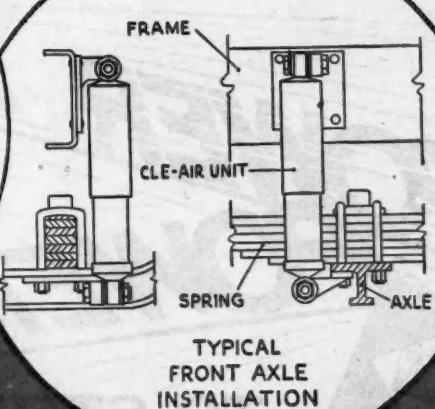
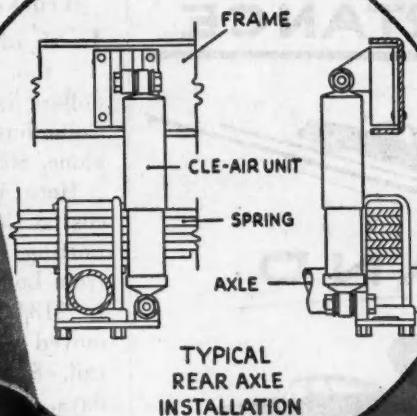
Especially prepared for use in KLEER-FLO CLEANER. Lifts grease and grime deposits quickly, safely. Will not attack metal or paint. Needs no heat, no water. Fast drying.

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**CLE-AIR UNITS** can readily be installed on all types of buses, trucks, semi, full and special trailers. Usually installations are made using simple frame and axle brackets which may be mounted readily without effecting any changes on the chassis. The terminal mounting studs may be at right angles with one another or in line. The typical front and rear axle installations shown give a general idea of the mounting principles. Detailed instructions can be supplied upon request.

Cle-Air units are equally simple to service. The only maintenance required is periodic checking of the fluid level. Inspections every 15,000 miles are usually sufficient. This is a matter of only a few seconds with the conveniently located filler plug. With proper checkup and maintenance, Cle-Airs will last as long as the vehicle on which they are installed.

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## TRUCKS SAVE TIME MOVING ASSEMBLIES

(CONTINUED FROM PAGE 124)

possible on the route traveled. The trip was made entirely in the daytime.

Biggest assembly trucked to Curtiss-Columbus is the Helldiver center panel, which comes from the Chrysler plant at Detroit. Two center panels are carried side by side in one trailer. Since the top of the assembly

rises 14 ft. 6 in. off the ground, a special route had to be mapped to avoid low bridges. Curtiss-Columbus' traffic department worked with the county engineer to arrange for branches to be lopped off and even trees cut down along the route to give the trailer clearance. So successfully was the job developed that 2000 loads have been transported with damage to only one center panel.

Contract truck-trailers are employed for many of the Airplane Di-

vision assemblies. Some are rebuilt auto trailers, others are new, especially designed for the particular job they are handling. Many assemblies are transported on dollies which can be rolled in and out of the trailers.

Much ingenuity has gone into the problem of how to fit the greatest possible number of assemblies into the trailers. At one time at Columbus, for example, only five speed rings could be carried in one trailer. Now, by dividing the rings into half and fitting them together into a double deck, 18 can be carried.

### Trucks Save Over \$1,000,000

USE of trailer-trucks saves money, too. More than one million dollars has been saved in one year at Columbus. On the center panel alone, \$639,605 was saved.

Here is a typical representative cost at Curtiss-Buffalo; it's for transporting one C-46 lower aft section from Loudonville, Ohio. Cost by rail is \$134.55; cost of crating when moved via rail, \$125; total cost via rail, \$259.55; rail transit time, 3 days.

Cost when moved via special truck, \$150; cost of converting the trailer to haul the section, \$400; truck transit time, 1 day. Saving to the Division totals \$109.55. It is figured that the cost of the especially constructed trailer will be amortized after four of the C-46 lower aft sections have been transported by this means.

### Special Delivery Troubles

TRAFFIC departments in Division plants have many a dramatic story to tell of getting assemblies delivered in a rush.

Early on the morning of Jan. 24, St. Louis received a hurry call from Rosecrans Field, St. Joseph, Mo.—an outer panel was urgently needed for a Navy Commando which had been wrecked there while en route overseas.

A spare outer panel was quickly loaded aboard a trailer, as the Traffic Department attempted to persuade the Missouri Highway Patrol to permit the trailer to travel directly to St. Joe. They refused, since the trailer could not pass under several bridges on each of the many routes they checked for clearance.

(TURN TO PAGE 128, PLEASE)

## OF EQUAL IMPORTANCE

**POWER AND POWER TO STOP!**

**MILEY BLACK GOLD**

FOR BRAKING the Horse Power—safely, evenly and smoothly—on your cars and trucks, install the brake linings that have been perfected for wartime requirements for new and higher standards of braking power and longer wear—**MILEY BLACK GOLD**. For over 22 years Miley Brake Linings have been standard for better brake linings and service, they've become nationally famous for safer, smoother stops.

Stock Miley Brake Shoes and Brake Lining Sets. And to save manpower, use the Miley quick Exchange Service on Ready-Lined Shoes—available with either regular or oversize linings. Ask your automotive jobber for full details. NEW Lined Brake Shoes for all popular cars also available. Order **MILEY BLACK GOLD** or **EBONITE** brake linings today.

Write for full details and prices of our 7-day exchange service

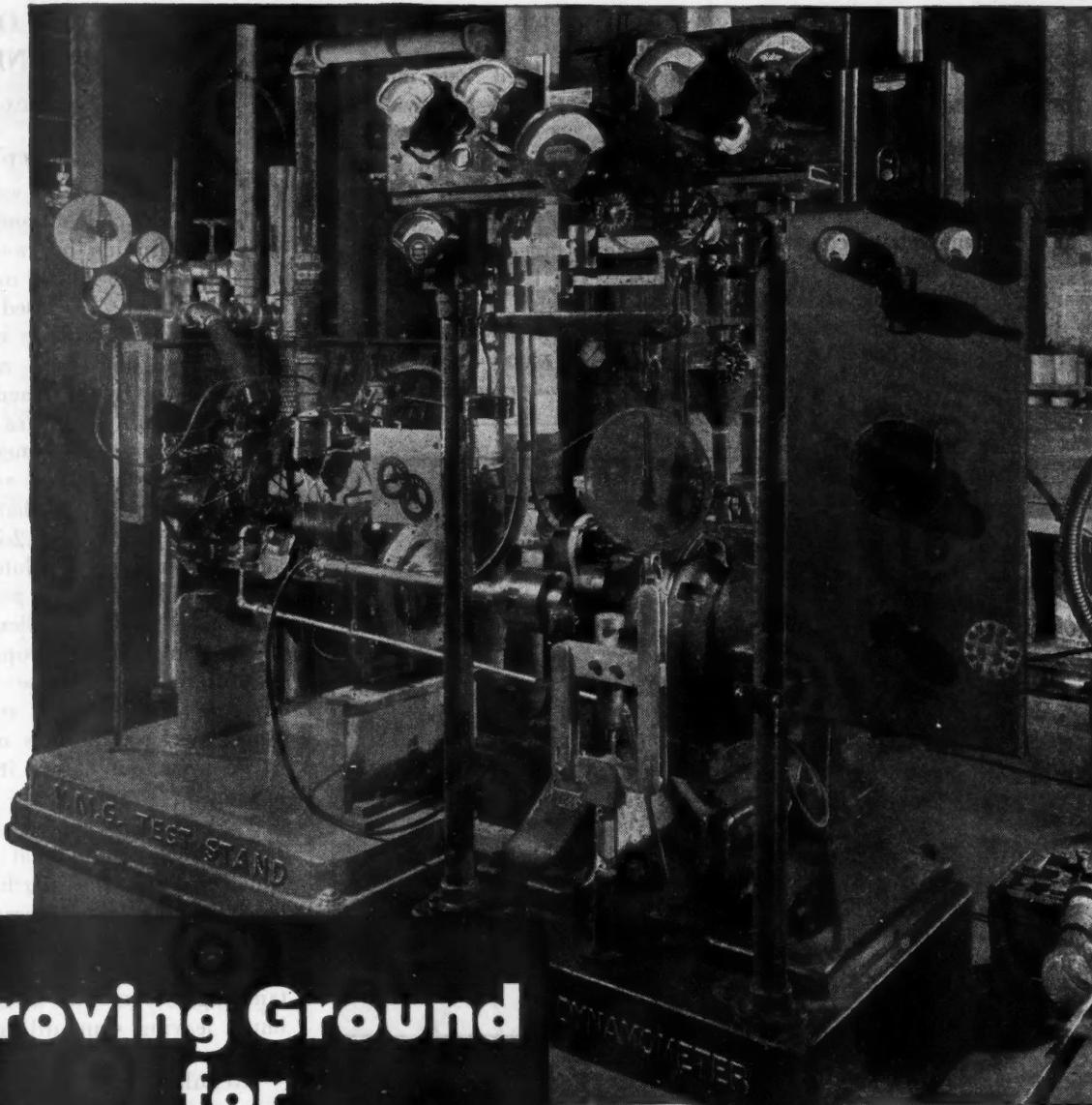
THE L. J.

**MILEY**

COMPANY, Inc.

1060 WEST ADAMS STREET • CHICAGO 7, ILLINOIS

Plants in Chicago, Illinois and North Manchester, Indiana



## Proving Ground for GASKETS

"Natural wear and tear" at one time constituted the only method of establishing the gasket requirements of any engine. However, years ago Victor took the lead in *pre-testing* gasket materials and design *in the laboratory*. Every Victor gasket design is based, not only on years of experience, but also on months of research, culminating in weeks of scientifically controlled testing on production engines in the labora-

tory. Keeping pace with the times, Victor's research department installed the latest model Eddy Current Dynamometers as illustrated above. Designed to measure performance at 6000 RPM, these instruments are capable of pre-testing gaskets for the higher-speed engines anticipated for the postwar automobiles.

The facilities of Victor's research department, and the services of experienced engineers, are available to any motor manufacturer who has a problem that gaskets can solve. VICTOR MANUFACTURING AND GASKET COMPANY, P. O. Box 1333, Chicago 90, Illinois, U. S. A.

SEALING PRODUCTS *Exclusively*



# VICTOR

## TRUCKS SAVE TIME MOVING ASSEMBLIES (CONTINUED FROM PAGE 126)

So, the department finally developed a plan that involved the use of 11 roads in Illinois and 13 in Missouri—many of them untried county highways. The first leg of the trip was uneventful. But trouble struck the next day. Traveling a county road, the trailer bogged down. The driver hired a farmer to pull him

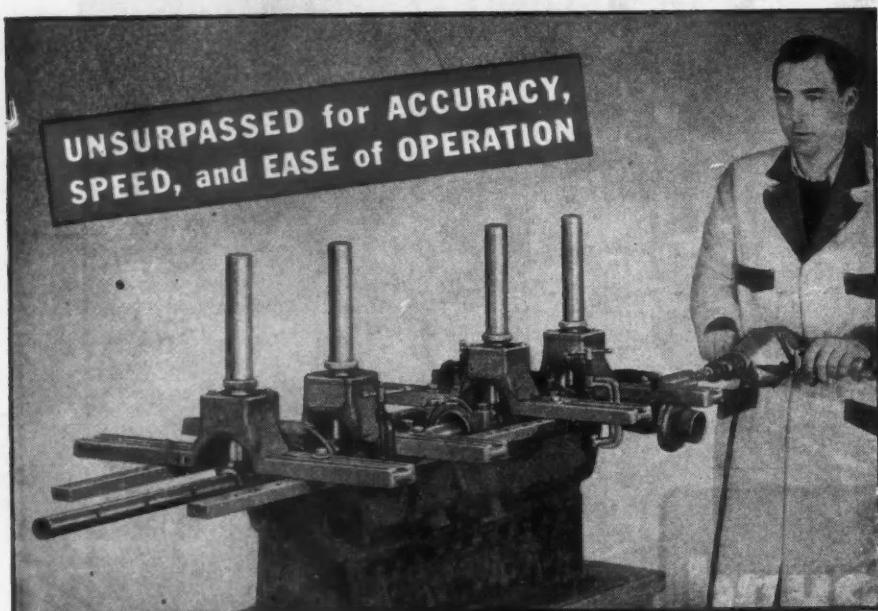
out with a tractor, but the tractor broke down.

The driver realized there must be an Army air field in the vicinity. There was.

The following day he got a huge Army wrecking truck to pull the trailer from the mudhole. Shortest route to the stranded Commando was 308 miles. The trailer had traveled 369 miles, but the outer panel was delivered.

END

(Please resume your reading on P. 106)



# AMMCO

Model "L42" Universal

## LINE BORING MACHINE for Main and Camshaft Bearings

- Takes care of all cars and trucks.
- Sets up in less than 10 minutes.
- Needs no centering rings.
- Accurately bores bearings  $1\frac{3}{8}$ " to 4" dia.
- Power driven or hand operated.
- AVAILABLE . . . Ask for new catalog page.



Over our factory flies the ARMY-NAVY "E"—awarded for excellence in the production of machinery and tools vitally needed to win the war.

AUTOMOTIVE MAINTENANCE MACHINERY CO.  
2100 Commonwealth Avenue • North Chicago, Illinois

## FLEET TAILORS OWN ENGINES

(CONTINUED FROM PAGE 78)

### 12-in. Clutches Replaced

ON CERTAIN units we had considerable clutch trouble. They were not slipping but were wearing out in 15,000 to 20,000 miles.

Investigation disclosed that the 12-in. clutches in these units could be changed to 14-in. clutches by changing the flywheel and installing the new parts. This extra two inches in diameter gives an immense amount more of wearing surface and yet does not change the clutch characteristics.

We changed all the 12-in. clutches and our oldest 14-in. clutch has run 184,864 miles and tests perfectly.

There is no lack of flexibility nor increase in strain on propeller shafts or differentials because the clutch pressure is the same, and it lasts longer because there is much more to be worn out before it needs renewing.

Again I think this is due to our routes and believe that the small clutch might give as much service as the larger one in a different country, which indicates tailoring to your needs is a good thing. Incidentally, tailoring to your own needs does not imply leaving standardization.

### Regulators Closely Adjusted

GETTING back to our theme that big troubles have small beginnings, we start curing our ignition trouble and fast-wearing points at the voltage regulator.

Everybody knows that coils and condensers must be in proper relation to each other to keep distributor points from burning. Putting in coils of higher capacity increases the high tension voltage and causes the points to burn more rapidly.

One popular automobile has an ignition coil with just barely enough capacity to fire, and this car is noted for freedom from condenser burnouts and point trouble as long as it is left that way. A coil of higher capacity has been known to burn up the points in this car in less than 50 miles.

This same thing happens when voltage regulators are not adjusted properly when they hang on too long before cutting out.

(TURN TO PAGE 130, PLEASE)

# Soft Pressure DOES IT!

• It's no trick to make a piston ring that stops oil-pumping. The hard job is to stop oil-pumping and still be gentle on the cylinder walls.

Steel-Vent controls oil with *soft pressure*—and soft pressure checks cylinder wear . . . in rebore jobs as well as in tapered jobs.

Today's aging engines all need soft pressure.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN  
Hastings Mfg. of Canada Ltd., Toronto

IT'S A PRIVILEGE  
TO BUY WAR BONDS

## SOFT PRESSURE DOES IT—IN REBORES, TOO

From a shop in Pennsylvania comes this "re bore report": "For the past 5 years we have been using Hastings Steel-Vent piston rings in all our rebore jobs. We have rebored approximately 1,000 motors. We find that the cylinder wear where we used Steel-Vent rings in rebore jobs is much less than when we used plain cast-iron oil rings."



HASTINGS STEEL-VENT  
PISTON RINGS  
U. S. PAT. 2,148,997

TOUGH ON OIL-PUMPING GENTLE ON CYLINDER WALLS

## FLEET TAILORS OWN ENGINES

(CONTINUED FROM PAGE 128)

If the secondary voltage with a given coil and condenser assembly is 25,000 volts at a primary input voltage of six volts, and the voltage regulator hangs on at voltages of 7½ to 8 volts, which is obtained from the combined voltages of the generator and a fully charged battery, then the high voltage will be increased one-third. This would make the second-

ary voltage of the coil between 32,000 and 35,000 when it is only supposed to deliver 25,000. These voltage figures are arbitrary and do not represent any given set of conditions but serve to illustrate what the increase will do.

This increased secondary or high tension voltage causes increased burning and pitting of points. It requires more labor in checking the ignition system and replacing parts, and may burn out the coil and voltage regulator.

For these reasons we check all the voltage regulators in the fleet every thirty days both for amperage and voltage and readjust them to cut out at 7.2 volts.

This practice has reduced the service necessary on ignition systems and the use of replacement parts.

END

(Please resume your reading on P. 80)

## DRIVER'S "UPPER BERTH" TOPS IN SOLID COMFORT

(CONTINUED FROM PAGE 80)

Perfect heating has been accomplished by placing two sealed-beam headlights under the covers. In the coldest winter this provides plenty of heat, it was said. A vent in front assures proper ventilation.

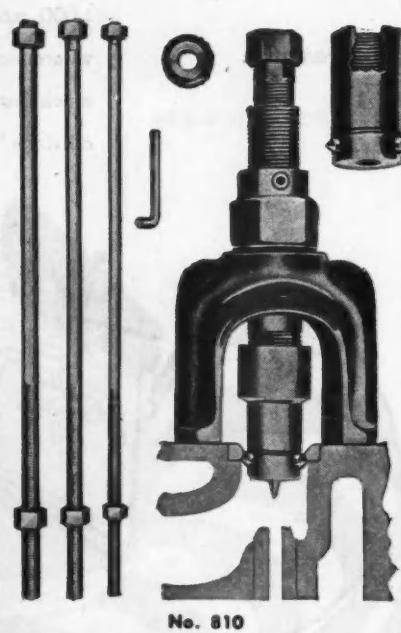
Special mattresses are used, and the company furnishes clean pillow slips and sheets for each trip. Principal run of the company using these bunks is between southern points and Chicago.

END

(Please resume your reading on P. 82)

**PULL VALVE  
SEAT RINGS and  
VALVE GUIDES  
EASILY  
QUICKLY  
SAFELY  
with the NEW**

**BISHMAN**  
VALVE SEAT RING  
and VALVE GUIDE  
**PULLER**



No more risky, damaging, time-wasting prying or hammering. Just set the BISHMAN PULLER on the motor block as shown above, turn screw to set 3 hard sharp points under the ring, then turn large nut with wrench to pull out the ring. The 2 sizes of puller heads handle most car, truck, tractor and bus engines.

**Pull Valve Stem Guides without taking out motor.** Use same fixture; it has a hollow center through which to slide pull rods (3 sizes and retainer ring furnished, as shown). No. 810 Puller Set packed complete in steel box with two extra sets of points—a great time-saver and man-saver.

**ASK YOUR JOBBER or WRITE US**

**BISHMAN MFG. CO., 1101 SOUTH 2ND ST., MINNEAPOLIS 15, MINN.**

**BISHMAN**



WHICH  
OIL  
GOES INTO YOUR ENGINES?

**A LAZY OIL**  
*that only lubricates*

DON'T be too quick to blame your engines if they're not turning in the kind of performance they should. It may be your oil is "laying down on the job." For an oil that's lazy . . . doesn't do its full quota of work . . . can cause plenty of engine trouble.

Quite a few operators who have a wartime obligation to fill are taking no chances . . . have switched to hard working Shell TalpeX, the oil that does all the jobs necessary to keep engines running at peak efficiency.

If the oil you now use is not doing all these jobs, it's lazy—should be changed to hard-working TalpeX. Ask the Shell man to show you why.

Shell Oil Company, Inc., 50 West 50th Street, New York 20, N. Y.—100 Bush Street, San Francisco 6, California.



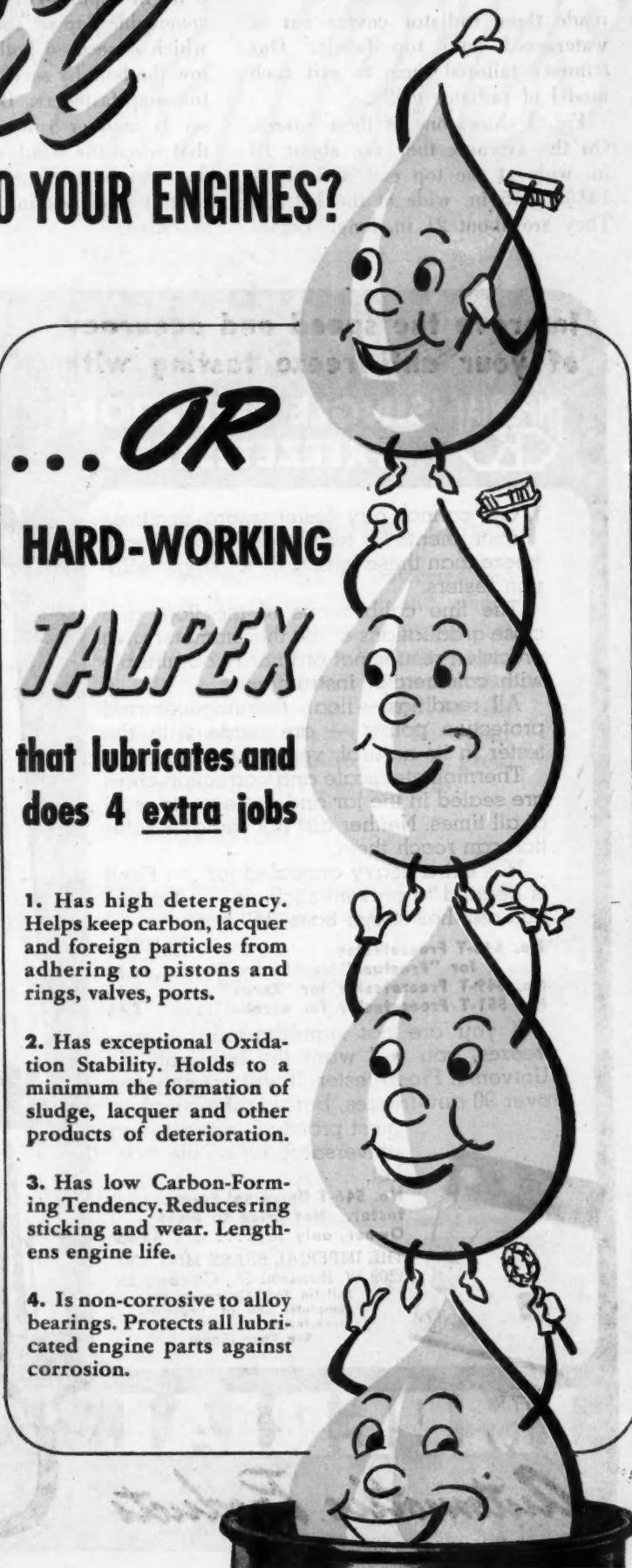
**TALPEX**

THE ALL-PURPOSE,  
HEAVY-DUTY LUBRICANT

For trucks, buses, tractors, shovels,  
stationary and marine Diesels

... OR  
**HARD-WORKING**  
**TALPEX**  
**that lubricates and**  
**does 4 extra jobs**

1. Has high detergency. Helps keep carbon, lacquer and foreign particles from adhering to pistons and rings, valves, ports.
2. Has exceptional Oxidation Stability. Holds to a minimum the formation of sludge, lacquer and other products of deterioration.
3. Has low Carbon-Forming Tendency. Reduces ring sticking and wear. Lengthens engine life.
4. Is non-corrosive to alloy bearings. Protects all lubricated engine parts against corrosion.



## 250-MILE OIL CHANGES

(CONTINUED FROM PAGE 74)

made these radiator covers out of waterproof auto top fabric. Our trimmer tailored them to suit each model of radiator grille.

Fig. 1 shows one of these covers. On the average, they are about 18 in. wide at the top end and about 14½ to 15 in. wide at the bottom. They are about 21 in. long. Begin-

ning about 3 or 4 in. below the top of the cover there is a window of about 6 or 7 in. in width and 8 or 9 in. in depth. This is covered by a removable flap of about 8 by 10 in., which is secured both above and below the hole by several ordinary button snap fasteners. Below the bottom set is another row of fasteners, so that when the window is opened the flap can be buttoned down, to prevent it from waving or flapping in the wind.

### Sludge Still a Problem

HOWEVER, while improving the situation, these covers never got the engines hot enough to keep them entirely free from sludge. This is due primarily to the sort of driving trucks are forced to do. The driver makes no long, uninterrupted trips, but stops frequently and parks for a time. When he is ready to start again, the engine has cooled considerably. It is easy to see how impossible it is to maintain the temperature desired under such conditions.

One thing that saved us in this connection was our handling and changing of the oil.

We check the crankcase oil level at least twice weekly. We found filters were not doing the job, for, while they will pick up any foreign material that floats in the oil, they won't prevent sludge from forming. So, about a year ago, we took off all the filters, because we consider dilution engine public enemy No. 1. We change the oil on all trucks once a month, regardless of mileage.

We have our oil re-refined. This is a new idea we are trying, in conjunction with the use of radiator covers, to increase the heat of the engine and thus prevent dilution. About 75 per cent of the drained oil is reclaimed. It costs us 25 cents per gallon, as compared with around 65 cents for new oil. We use reclaimed oil for both refills and adding, as tests have shown us that it is as good as the new oil. In 75 per cent of the trucks no oil needs to be added between refills. This practice has improved the quality of the crankcase oil at least 60 per cent up to now, as shown by laboratory tests. This also improved engine performance. Drivers report the trucks pull out better, don't get that objectionable "spit" and require less choking.

We subscribe to an oil-inspection service and send crankcase samples to the laboratory as often as they recommend. We consider the service well worth the cost from several standpoints—from the vast improvement in our oil, which lessens oil costs; from improved engine performance; from less wear on engine parts, etc.

The Acme Breweries, San Francisco, has 65 trucks and 35 passenger cars in San Francisco alone, besides

(TURN TO PAGE 134, PLEASE)

### Improve the speed and accuracy of your anti-freeze testing with IMPERIAL **SINGLE SOLUTION FREEZETESTERS**

YOU cannot buy faster, more accurate instruments for testing one type of anti-freeze than these Imperial "K" single solution testers.

The fine calibrations of the float and close graduations of the thermometer give precision results not ordinarily obtainable with commercial instruments.

All readings—float, thermometer and protection points—are made with the tester in its natural, vertical position.

Thermometer scale and correction chart are sealed in the jar and are easy to read at all times. Neither dirt nor radiator solution can reach them.

Has extra heavy annealed jar... Float is beaded to prevent sticking... Tip has non-roll, hex-shape base, 15" hose.

Net price to  
Fleet Owner

for "Prestone" Brand Ethylene Glycol... \$1.65

No. 549-T Freezetest for "Zerex" ..... 1.65

No. 551-T Freezetest for Alcohol..... 1.65

If you are not standardized on anti-freezes, you will want the Imperial "K" Universal Freezetest. It will not only test over 90 anti-freezes, but it is the simplest, most practical, easiest-read universal tester on the market.

No. 546-T Universal Freezester. Net price to Fleet Owner, only ..... \$3.45

THE IMPERIAL BRASS MFG. CO.  
1209 W. Harrison St., Chicago, Ill.

Bulletin No. 328 covers the complete line of Imperial Freezetesters.

See Your Jobber

# IMPERIAL

*Automotive Products*

# "Auto-Lite Batteries

... FOR TROUBLE-FREE  
DEPENDABLE PERFORMANCE"

says J. L. KEESHIN, Keeshin Freight Lines, Inc., Chicago, Illinois

"In its wide range of operations our truck fleet gets some of the Nation's toughest transportation jobs. From experience we know our batteries must meet the most exacting service conditions. We can honestly recommend Auto-Lite batteries for the utmost in trouble-free, dependable performance."

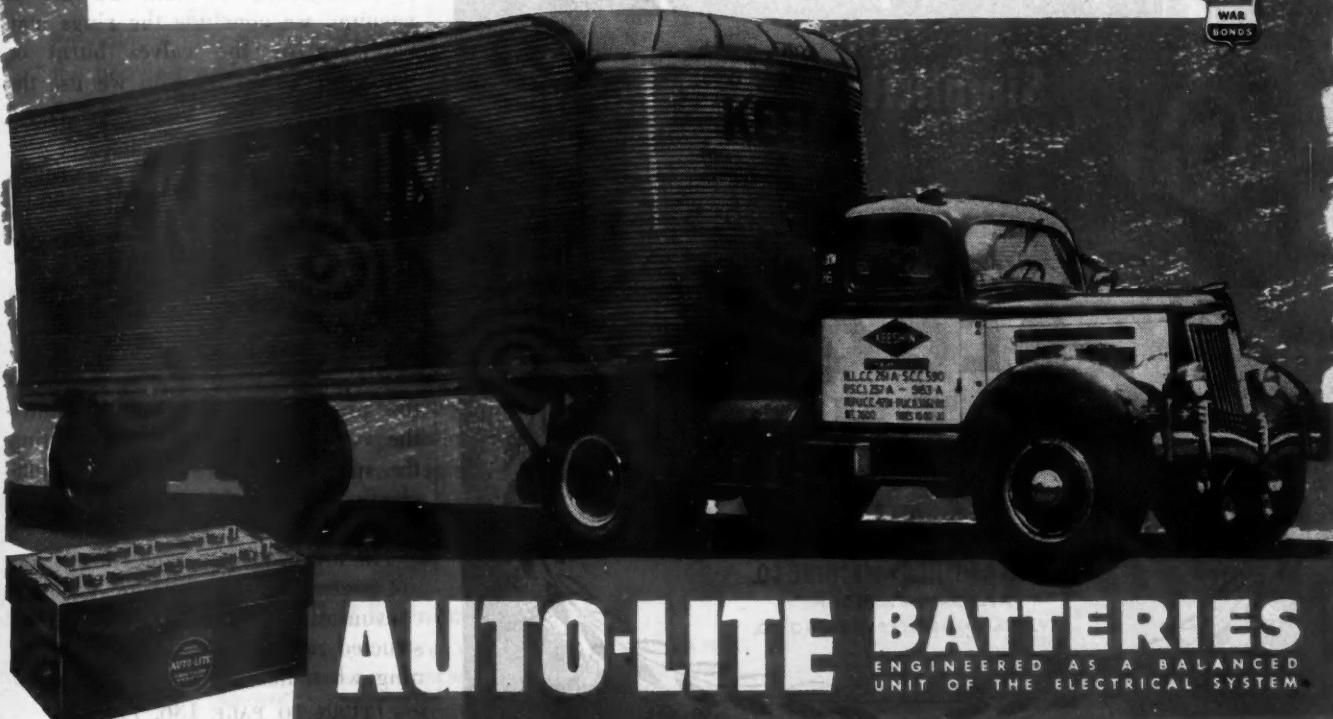
Here, again, Auto-Lite batteries are delivering the power when and where it's needed. Here, again, is proof that what you want most in a battery — long life, quick starts, dependable power and low-cost operation — is found in the famous Auto-Lite batteries. See your supplier about installing these great batteries in your fleet, or write to

AUTO-LITE BATTERY CORPORATION

TOLEDO, 1

OHIO

Manufacturing Plants at: Niagara Falls • Atlanta • Indianapolis • Oakland • Oklahoma City • Toronto  
TUNE IN "EVERYTHING FOR THE BOYS" STARRING DICK HAYMES—EVERY TUESDAY NIGHT—NBC NETWORK



## AUTO-LITE BATTERIES

ENGINEERED AS A BALANCED  
UNIT OF THE ELECTRICAL SYSTEM.

## 250-MILE OIL CHANGES

(CONTINUED FROM PAGE 132)

21 trucks in the interior of the state. Last year our beer trucks traveled about 147,300 miles, and the yeast trucks 319,800 miles, while the passenger cars went about 250,000 miles. Before the war we had five mechanics and three greasers; now we have four mechanics and two washers and greasers besides a superintendent and a foreman. All

of these men work in the daytime, except for one mechanic and one washer, who take the night shift.

We do about 90 per cent of our work ourselves, sending out only the electrical jobs. If we have a mechanical failure on the road which can't be fixed on the spot, we tow it in.

### Tire Mileage Excellent

WE think we have done pretty well with our tires. Some of our trucks have had the same tires for

eight years. We get about 24,000 miles from the original tires and from 75 per cent to 90 per cent of that mileage from the recaps. We recap twice and sometimes three times. We do not discriminate between the use of original and recap tires, using the recaps anywhere that we do the new ones. We recap just before the wear reaches the breaker strip, always aiming to leave enough rubber to protect that strip. We rotate tires diagonally across when wear shows the need of change. We inspect them every week for nails and glass.

We match dual tires by measuring them for height with a gage every six weeks. We use a precision gage, which we built ourselves. It is a double-arm gage with two jaws adjustable to the larger tires. We measure the inside duals for height by taking the tire off. We prefer this method to circumferential measurement because it is faster and more accurate. We have no maximum dimensional differential between the tires, merely matching them as near as possible.

### Detailed Engine Check-Up

WE HAVE an engine tune-up at least once a month. We check the plugs, points, carburetor, air cleaners, fuel pumps, gas strainers, idling of engine, etc. We test the idling of the engine by taking a reading of the vacuum gage. If it doesn't show between 18 and 21 in. of vacuum, we conclude the rings may be worn or the valves burnt or broken. In this tune-up we use the timing light, point synchronizer and vacuum gage. We measure the vacuum for leaks in the intake manifold, etc.

We do not time the ignition to the fuel used, but stay with the manufacturer's recommendation. It is true, of course, that readjusting the spark cuts down pinging, but it is also true that it loses power, so when the ping gets too bad, we remove the carbon, instead of readjusting the spark. The carbon collects sufficiently to make this operation necessary about every 4000 miles.

The lowering of octane ratings has not materially affected our gasoline consumption, for drivers are instructed not to leave the engine running when not necessary and to use

(TURN TO PAGE 136, PLEASE)

Every need in the field  
of Universal Joints is  
included in the Blood  
Brothers line . . . famed  
for Dependability . . .  
Simplicity and Economy.

BLOOD  
BROTHERS  
UNIVERSAL JOINTS

BLOOD BROTHERS MACHINE CO.  
ALLEGAN, MICHIGAN  
DIV. STANDARD STEEL SPRING CO.



# RUGGED

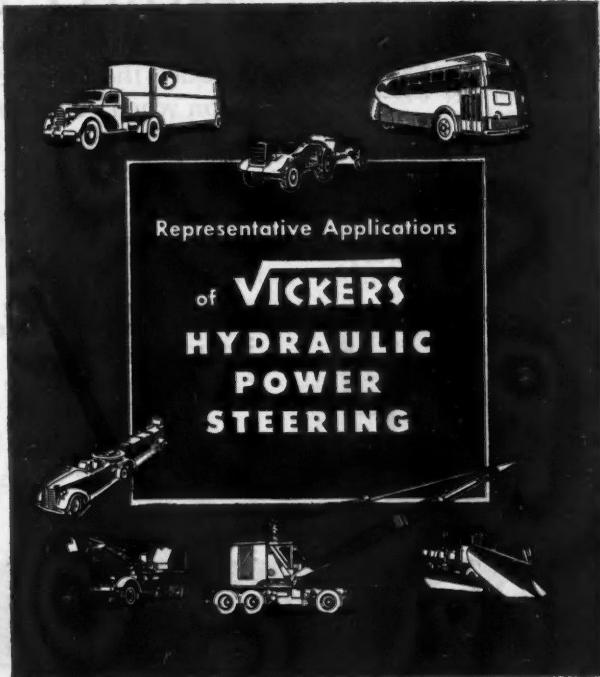
## Another Feature of **VICKERS** HYDRAULIC POWER STEERING SYSTEM

Providing effortless, positive, and shockless steering of even the heaviest vehicles, Vickers Hydraulic Power Steering has been in use under the most adverse operating conditions for the last 14 years. The hydraulic system is protected against overload by the relief valve which limits the maximum hydraulic pressure of the system. The pump and booster are thus protected against damage from excessive pressure and the linkage system from abuse. With Vickers Hydraulic Power Steering, road shock thrusts are transmitted to the frame of the vehicle instead of to the steering gear.

Among the many other advantages of Vickers Hydraulic Power Steering are: greater driver efficiency by reducing fatigue to a minimum, easy application to existing chassis designs, wheel "fight" is impossible, greater road safety, and automatic lubrication. Ask for new Bulletin 44-30 for all the facts about the Vickers Hydraulic Power Steering System.

**VICKERS** Incorporated

1418 OAKMAN BLVD. • DETROIT 32, MICHIGAN  
Application Engineering Offices: CHICAGO • CINCINNATI • CLEVELAND • DETROIT  
LOS ANGELES • NEWARK • PHILADELPHIA • ROCHESTER • ROCKFORD  
TULSA • WORCESTER



## 250-MILE OIL CHANGES

(CONTINUED FROM PAGE 134)

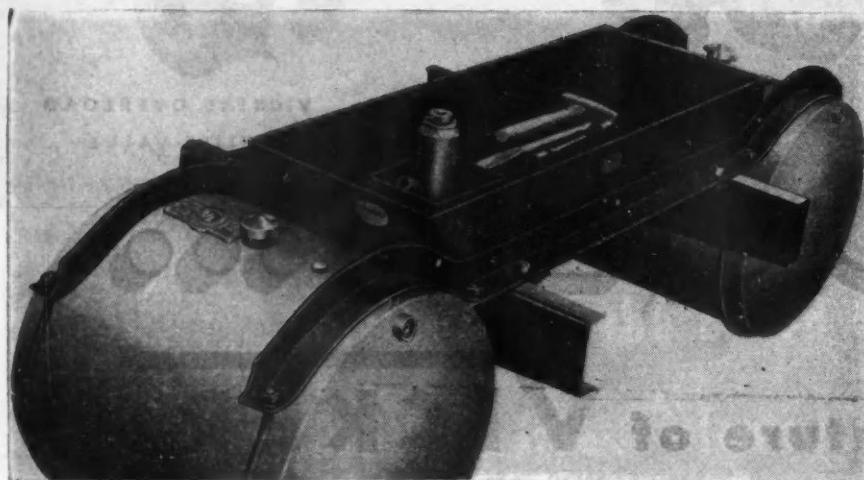
the choke as little as possible. We have installed pull-back springs on the chokes. We tell the driver to open the choke again after using, but, if he forgets, the spring gradually opens it. This has offset to a great degree the decrease in octane ratings in the gasoline.

We change batteries every 18

months, regardless of usage or condition. This and our monthly tune-up assure easy starting and prevent gas wastage. We give the batteries special care and supervision. We check twice a week to see that the generators are charging. The driver's active cooperation also is used to the fullest extent. If he finds the ammeter is not showing a charge in the generator, he reports to us at once.

The water in the battery is checked every week and the battery kept tight in the carrier at all times.

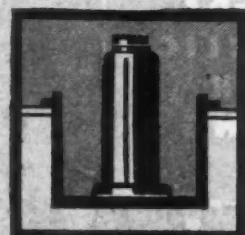
## PRIOR Safety TANKS AND TOOL BOX SETS



### PRIOR Safety TANKS

### and TOOL BOX Sets

The Prior Safety Tank and Tool Box set offers special features that every truck owner can appreciate... curved angle iron suspension; large capacity fuel tanks; tool box across the frame, giving assembly streamlined appearance, can be securely locked, and contains special well to keep hydraulic jack upright. (Illustrated below.) Special battery well can be provided, if desired.



## SAVE MONEY AND PROTECT EQUIPMENT

Safety fuse plugs and non-spill caps reduce the hazards of fire and explosion when your truck is equipped with PRIOR Safety TANKS. Also, you can eliminate frequent refueling stops because of their large capacity... and they add to the good appearance of your equipment.

WIRE FOR DEALER'S NAME  
OR SEND THIS COUPON TODAY

### PRIOR PRODUCTS

Please send complete information about Prior Safety Tanks and name of nearest dealer.

Name \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

C.O.D.

DALLAS, TEXAS,  
CLINTON, ILLINOIS

## PRIOR PRODUCTS

## Salvage a Full-Time Job

WE SALVAGE water pumps, brake shoes, etc.; rebuild entire engines, clutches and other assemblies; reline clutch discs, renew the springs in the pressure plates, using electric welding on the thrust side, and re-machine the differential cases. We use both arc and acetylene welding.

Electric welding will not distort the part, nor get it out of alignment, as with the flame of acetylene. The brake drum is distorted by heat, but not by electric welding. For parts that have to be brazed—where we want to build up a shaft, for example—acetylene is much better, for the metal flows better and can be controlled. In short, we use electric welding wherever the excessive heat from acetylene welding would do damage. In welding the generator armature shafts and the starter armature shafts, acetylene welding would burn the armatures. We use acetylene on the differential case where we have to build up for bearing seats and similar operations.

We save time and money by our salvaging. We do the work in our spare time; then we don't have to go out on a still hunt for the parts when they are needed. We find these rebuilt or repaired parts are just as good as they were originally, sometimes even better, for we often reinforce a part and make it stronger. The matter of determining whether or not to salvage a part depends on whether we need it badly enough and whether it will deliver the goods.

We rebuild our engines, fuel pumps, radiators, carburetors and distributors, which in the past would have been exchanged, or traded in on new ones, though we always did repair our radiators. We keep a spare transmission and also a spare rear-end assembly rebuilt at all times on hand for any emergency. We also rebuild pistons, wrist pins, rings and bearing inserts, which with the engines, all require new material.

END  
(Please resume your reading on P. 76)

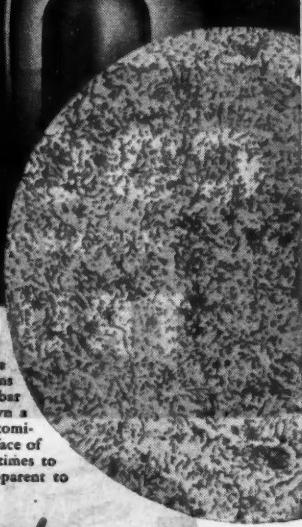


Frank E. Farrell has been named assistant to the director of automotive sales, Bendix Products division, Bendix Aviation Corp.



**Scientific "Peeping Toms"  
Look at the INSIDE  
of Steel . . . . .**

Laboratory tests are made chemically and magnetically to detect any surface and subsurface imperfections of New Britain tool steel bar stock. To the right is shown a typical cross-section photomicrograph in which the surface of the steel is magnified 500 times to expose any defects not apparent to the naked eye.



*to give you Mechanics Hand Tools that make money*

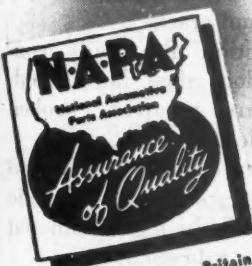
Any mechanic who has "jammed up" his knuckles because a tool failed, due to some unseen weakness, doesn't have to be sold on the importance of looking INSIDE, as well as at the surface of the steel that goes into a hand tool. A yank . . . a sickening snap . . . flesh and bone smash into bruising metal and the damage is done—It's that fast!

Fifty years ago, the accidents caused by structural imperfections in tool steel were just part of the game. But then, there were no trucks and no fleet maintenance problems. At 1945's swift pace, your tools *must* be right . . . sound INSIDE as well as out,

with the guts to stand up to today's pressure.

New Britain Hand Tools depend not alone on the finest alloy steel to begin with, but this carefully selected steel is checked right down to its very molecules by the most exacting instruments and techniques known to present day metallurgical science.

Naturally, there's "knuckle-insurance" for YOU in this care and precision. Ask your NAPA Jobber to show you the line. He'll be eager to . . . it's that good! The New Britain Machine Co., New Britain, Conn.



The complete New Britain line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

# New Britain



The Army-Navy "E" Pennant, with stars, flies over New Britain's plants, signifying outstanding production of machine tools, aircraft engine parts and projectiles.

**GREATER STRENGTH • BETTER FIT**

# HAND TOOLS

## "BLUEPRINT" FOR MAINTENANCE ECONOMY

(CONTINUED FROM PAGE 49)

essentially of a flycutter, such as is used in a lathe in a machine shop which is in a shaft similar to the countershaft. One end is threaded which provides the feed by turning up the nut which pulls the flycutter into the metal to be cut. Two views of this tool are shown in Fig. 3. He turns it with an electric drill. This

has made possible reclaiming all transmission cases thrown out for this reason.

ALL universal joints are inspected daily on Form No. 1, and greased periodically as recorded on Form No. 3.

Rear axle maintenance comes in for a regular schedule. It gets its first taste of our PM program at a general inspection, when Form No. 5 is used. At this time it is torn down and inspected for bad gears,

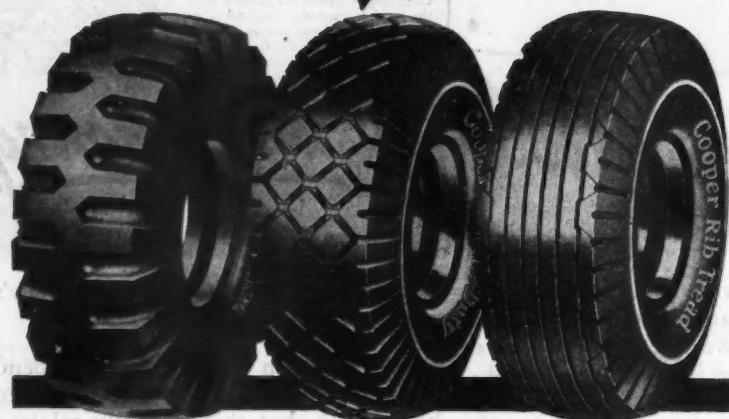
bad bearings and any other abnormal conditions. It is thoroughly cleaned and repacked with grease and wheel bearings are inspected and repacked.

Differential is inspected for abnormal noises and grease level checked at the daily inspections; also springs and U-bolts are checked.

Some differential parts have been improvised. Idler gear pins for Eaton two-speed axle, are improvised from steel drive lines. A brass bushing is pressed into the idler gear making it possible to use a steel pin instead of brass pin.

Front axle has its system of inspection and maintenance. At daily inspection king pins and bushings are inspected for looseness or wear. Wheel alignment is checked. Front springs and U-bolts are inspected. At the 15,000-mile general inspection wheel bearings are inspected and packed with grease.

## COOPER DSC (DISTRIBUTED STRESS CONSTRUCTION) TRUCK TIRES



**Give You "More Safe Miles"  
for The Least Cost!**

Your tires represent a major investment in the maintenance of your trucks. So why not buy the best — Cooper DSCs — get more safe, trouble-free mileage at lower cost? Coopers are the last word in modern, scientific construction — extra strength and ruggedness built in, excessive flexing and friction taken out! They're cooler-running, longer-running truck tires you'll be glad are on your trucks.



### LOOK FOR THIS QUALITY NAME

For more than a quarter of a century the Cooper name has symbolized unsurpassed quality in the manufacture of longer-wearing tires for passenger cars, trucks, buses and farm equipment.

**THE COOPER CORPORATION**  
FINDLAY, OHIO

BRAKES are checked daily and results recorded on Form No. 1. The brake reading, as recorded on a brake machine, is recorded on a before and after basis. Throughout, where possible, before and after figures are required.

Brake lining is inspected, vacuum and air systems, compressors, drive belts, air and vacuum lines and breakaway system are inspected. Daily check of the hand brake is a requirement.

Daily frame inspection is recorded on Form 1 and consists of looking for broken cross members, loose or broken rivets and cracks.

Body inspection also daily consists of door, door glass, hood, fenders. Dents are removed, broken places are welded.

Reinforcement with  $\frac{3}{8}$ -in. rod underneath all around the outside edge of tractor body has eliminated breakage due to vibration.

Operating our own paintshop all faded and otherwise defective spots are touched up. Body repair has been kept going by improvising welding rods by the use of baling wire for 1/16-in. welding rod.

Lighting system is recorded and inspected. Form 1 is used for recording condition of head lights, tail lights, stop lights and reflex signals.

In this connection we changed the fusing of the lights. Since many of

(TURN TO PAGE 140, PLEASE)



**Attention:**  
**BUS OPERATORS**  
**and FLEET OWNERS**

Eliminate one cause for interrupted operating schedules—the failure of flexible hose fuel or oil lines.

FLEX-O-TUBE Hose Assemblies maintain automotive high standards and are engineered to resist not only the older type of gasolines, oils, etc., but also the newer type High Octane Gasolines, Aromatic Fuels, Oils, Water, etc.

Standardize with FLEX-O-TUBE Hose Assemblies and Fittings as they are built for heavy duty service.



**Flex-O-Tube**

751 FOURTEENTH ST.  
DETROIT 16  
MICHIGAN

## "BLUEPRINT" FOR MAINTENANCE ECONOMY

(CONTINUED FROM PAGE 138)

our trailers were getting old, and some developed shorts in the lighting system, we found that these circuits were fused with the tractor headlights. When the trailer shorted, the headlights went out. We wired the trailer lights through a separate fuse and now, when the trailer lights go out, the headlights remain on.

This has saved us many accidents.

Other safety devices inspected and recorded on Form 1 are: horn, windshield wiper, rear view mirror, coupling device and steering gear.

That is the shop part of our PM program.

### Other Home-Made Tools

A NOTHER tool that has saved us much time and speeded up the operation of removing and installing new hub bolts is a template made by Mr. Leach which is a jig with which

to drill the holes, shown in Fig. 4.

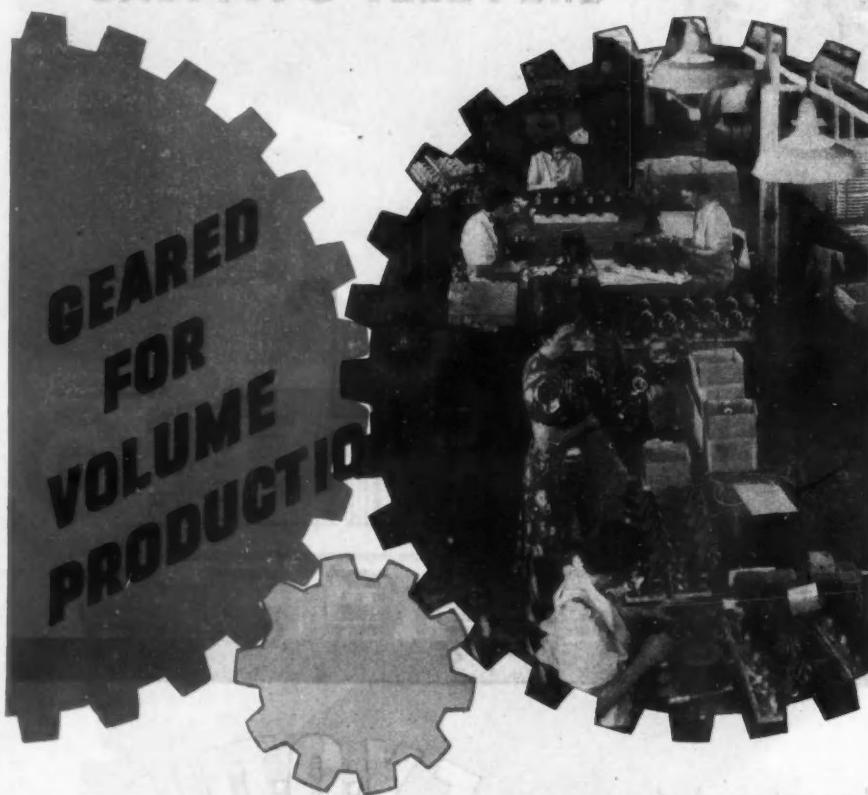
The template bolts on to any hub bolts left which positions several 3-in. case-hardened steel guides for the drill. Besides positioning the drill exactly in the center, it also acts as a depth gage making it impossible to drill too deep. This has made handling of this troublesome job a pleasure. The hardened guides are for  $\frac{3}{8}$ -in. drill, and the hole is tapped with  $\frac{7}{16}$ -in. standard tap.

In addition Mr. Leach has built surge tanks for all the radiators which has helped properly cool the motors. These surge tanks are made from old 3-gal. reserve vacuum tanks. They are mounted over the engine as shown in Fig. 5, and connect directly to the filler spout, and is filled at the surge tank.

### Drivers Get Written Instructions

DRIVERS are also given written instructions as to the part they are expected to play in our PM program. They are assigned regular tractors and we have found they will operate their tractors with more care. Drivers are required to report condition of the unit on Forms No. 2 and 2-A at end of every trip and we find that when they are assigned to regular tractors that they will do this more conscientiously.

A driver can also take better care of his equipment if he uses the same tractor regularly because he gets accustomed to how it handles.



The urgent demands of war production have stepped up output in all departments at the Fulton plant . . . far in excess of anything previously deemed possible.

Yes . . . we are definitely geared for volume production of service-proved Fulton Automotive Equipment . . . when materials and labor are again available in adequate quantities to meet the insistent demands of our trade. The backlog of unfilled orders grows greater day by day.

New products are ready for manufacture, as well as many of our long-established items such as Electric Sleet-Frost Shields, Rubber-Bladed Ventilating and Defrosting Fans, Accelerator Pedals, Sun Visors, etc. The Fulton Line will again merit your patronage . . . when the time comes for unrestricted production and sales.

**THE FULTON CO.** 1912 South 82nd Street Milwaukee 14, Wisconsin

<b>BAD ORDER</b>	
DATE	UNIT NO.
Because of the Inspection Listed Below Please Route This Unit to the Shop At—	
INSPECTION	
By HENRY G. BLACKWELL S. T. Inspector, Chief Inspector Shop Foreman (Shop rated) 6	

Fig. 6. "Bad Order" Form,  $8\frac{1}{2} \times 5\frac{1}{2}$  in., made out by the inspector when defective trucks are found in checkups

### Equipment Inspector on Road

WE ALSO employ an inspector who keeps constant watch on condition of our trucks. He checks equipment on the road, runs decelerometer tests on brakes and makes note of general condition. When defective equipment is found, he makes out a form (Form No. 6), called "Bad Order Form" which directs the (TURN TO PAGE 142, PLEASE)

# VACDRAULIC DISTRIBUTORS



Vacdraulic recognition is not happenstance. It has been achieved only for four basic reasons.

Vacdraulic Feather-Touch Stopability imparts safe, split-second brake action to any good hydraulic system.

Vacdraulic controlled power has been proven in service.

There is no action lag—no rods or links to get out of adjustment.

Vacdraulic, smooth, safe brake action reduces maintenance costs.

Consider, for example, these important features of one of the three Vacdraulic Models No. 240 for vehicles with 1½" and 1¼" master cylinders.

1. Stainless steel ball valves with full hard Navy brass seats for long life and positive action.
2. Heavily chrome plated and polished control piston and full hard Navy brass piston rings for wear-free operation.
3. One piece aluminum diaphragm plate for rigidity and lightness.
4. Type E Neoprene diaphragm, not easily damaged by gasoline or other petroleum base fluids.
5. New design cylinders to facilitate installation and bleeding.
6. Low pressure cut-in for efficient trailer relay valve operation.

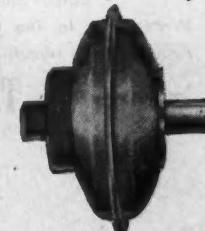
# VACDRAULIC

KELSEY - HAYES WHEEL CO., DETROIT 32, MICH.

Sold to Automotive Distributors by

EMPIRE ELECTRIC BRAKE CO., Newark 7, N. J.

VACDRAULIC is a Trade Mark of Empire Electric Brake Company



## "BLUEPRINT" FOR MAINTENANCE ECONOMY

(CONTINUED FROM PAGE 140)

unit be routed to nearest shop for repairs. He sends one copy to dispatchers, one copy to nearest shop foreman, places one copy in a conspicuous place on the unit.

This inspector rides the road on all the routes all the time in a Safety Patrol car with the name of our fleet on the sides. He has instructions to

help all motorists in trouble on the road.

He carries first aid equipment, tire repair equipment and some other small repairs. He is a "good will ambassador" for the company.

He reports directly to my office and, sometimes, goes out on special assignments. None of the drivers ever know where he is or where he is going—they only know that he may drive up behind them at 2 o'clock in the morning or may be parked when they stop for lunch.



An inspector is employed by the company as "good will ambassador." He patrols roads, checks company trucks and gives emergency aid to motorists.

If a driver is in trouble, we do know that he's very glad to see the inspector and many motorists have reason to think well of our company because of being helped by this "good samaritan" of the road.

The knowledge that he is on the road gives drivers a feeling of security because they know he can be sent to their aid in a hurry. Also, knowing that the inspector is always riding the highway makes a driver feel like keeping our trucks moving rather than having them parked along the road.

**END**

(Please resume your reading on P. 50)

**FOR IMMEDIATE DELIVERY**

**CENTRAL**  
*Certified Accuracy*

**MICROMETERS**

NO. 110RL

NO. 210RI

NO. 120RL

NO. 420RL

NO. 745RL

**WRITE TODAY  
FOR  
CATALOG No. 15**

\* The entire line of individual Micrometers and complete sets illustrated and fully described. Write today to The Central Tool Co., Auburn, Rhode Island.

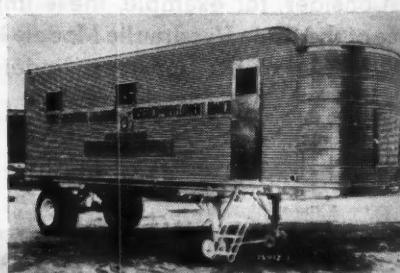
**THE CENTRAL TOOL CO.**

Micrometers of Certified Accuracy  
AUBURN RHODE ISLAND

THE CENTRAL TOOL CO.  
FOR MORE THAN A QUARTER CENTURY SPECIALISTS IN FINE MICROMETERS  
CERTIFIED ACCURACY



O. H. Smith, left, has been promoted to regional manager of the field sales division, Federal Motor Truck Co., for the Atlanta, Nashville and New Orleans regions. C. E. Althauser, will direct the operations of a newly organized Federal truck dealership at Indianapolis, Ind.



On-the-spot examination, by means of a completely self-contained mobile laboratory, guards against contamination of processed foods being procured by the Army for overseas shipment to high temperature zones. The laboratories are installed in trailers manufactured by the Fruehauf Trailer Co.



# Controlled Expansion

**FASHION NOTE: A Steel Girdle for Pistons will be  
worn by the better cars of tomorrow**

FROZEN (stuck) pistons and scored or out-of-round cylinders have cost motorists millions of dollars annually for many, many years. This ailment, familiar to every repair shop and fleet operator, has brought waste of power, loss in engine smoothness and acceleration—excessive consumption of oil and gasoline.

A new Thompson piston employs a patented cast-in STEEL-BELT. This controls expansion under engine heat. Now used in many wartime engines, it has been

successfully tested by leading automobile manufacturers.

Forty STEEL-BELTED numbers are already in Thompson replacement parts catalogs. After the war there will be many more. You'll probably find Thompson STEEL-BELTED pistons in a lot of post-war cars, trucks and buses. Because they can be fitted more closely, your customers will enjoy quieter, smoother operation, and benefit by longer-lived engines and marked savings in oil and gasoline.

This advertisement is one of a series on new or improved Thompson products for postwar progress.

*Keep Close  
to Your*

**Thompson**



CLEVELAND • DETROIT • LOS ANGELES

Products *Jobber*

## PRESSURE TESTING HEADS AND BLOCKS

(CONTINUED FROM PAGE 94)

Hot water on the other hand duplicating the operating temperature of the engine, under a pressure test, will uncover a greater number of hard to detect cracks than will the cold water test.

Incidentally, the preheating furnace mentioned above, and shown in Figs. 7 and 8, still has many advan-

tages for the type work it has been doing. For instance, despite its compactness, it will take a 6 cyl., one-piece engine block. So, if you must preheat before welding, such a furnace may prove very useful. It is simply made from loose fire brick and angle iron for the frame. The top is made from angle iron and loose slabs of asbestos. The slabs were made from scraps of asbestos paper soaked in water and molded into blocks one inch thick. For general heating, the work is completely en-

closed. By removing one of the asbestos slabs, the welder can gain access to the work from the top, as shown in Fig. 7. If needed, an entire section can be removed, as shown in the same illustration. By removing a brick or two, the welder can get at the work from any side, as shown in Fig. 8. The fuel is city gas. This preheating furnace is 25 years old, if it is a day.

A 4-gal., garden-type sprinkling can is used for heating the water. By removing the spray head, the can's nozzle fits into most of the openings on our cylinder heads and blocks.

### Testing Procedure

CRACKED cylinder heads and blocks are tested before as well as after repair. The test before welding shows up not only the location of the crack but its size, often some cracks in unsuspected places. The crack is then center punched so that the welder can see it better through his dark-lensed goggles when in the heater, or so that the crack can be followed when being chipped for bronze welding without preheating.

After the weld has been done, hot water is again used. Only this time we stir a can of liquid seal into the boiling water. If the test shows the job tight, that's all there is to the job. If pin holes or minor cracks are exposed by the hot water and the 10 lb. air pressure behind it, then the liquid seal is forced through these spots at about 30 lb. air pressure. The pressure is then shut off, and as the air pressure gradually leaks away, it carries the liquid seal through these same spots. After about 30 minutes another 10 or 15 lb. of air is pushed into the head or block and, usually, the leaks have stopped. The job then is unrigged and sent on its way.

The liquid seal is drained into the tank-like sink, as shown under the head under test in Fig. 9. A drain cock at the low end, sloping bottom of the sink permits the liquid-seal mixture to be funneled into a 5 gal. can and set aside for another job. After using this mixture on about a dozen heads, or blocks, it must be discarded; owing to the mud, scale and other foreign matter which leaves the parts after testing and which drains out of the part into the storage container.

The head under test has its pres-  
(TURN TO PAGE 146, PLEASE)

## KEEP VITAL TRANSPORTATION IN SERVICE



PROTECTIVE motor maintenance is the constant practice of men responsible for the efficiency, long-life and economical operation of vital transportation. They never relax their fight against sludge, gum, acid and corrosion.

It's simplicity itself—for LOOSITE safely and economically rids the entire lubrication system of dangerous petroleum residues. Then SILOO, added

to fresh crankcase oil, functions continuously—preventing further accumulations. Engines—gasoline or diesel—operate at maximum efficiency, oil reaches every vital part—thus costly layups and repairs are avoided . . . engine life prolonged.

You're miles and dollars ahead when you use LOOSITE and SILOO. Your dealer or jobber has them.

PETROLEUM SOLVENTS CORP., Gen. Off.: 331 Madison Ave., New York 17, N. Y.  
Solvents For All Types of Petroleum Residues

For sale by leading jobbers everywhere, and the White Motor Company branches and distributors.

Northwest's big Douglas air liners—powered with engines equipped with AC Ceramic Aircraft Spark Plugs



Automotive Spark Plug



AIRLINES, LIKE MOTORISTS  
choose AC for utmost reliability

Aircraft Spark Plug

Northwest Airlines, after eighteen years of serving the Northwest area, have now become the fourth American line to inaugurate ocean-to-ocean service. *Utmost reliability* being the watchword, it is not surprising that the engines of the great Douglas liners are equipped with AC Ceramic Aircraft Spark Plugs.

The history of these remarkable plugs goes back to World War I, when AC developed and built the *first and only* ceramic aircraft spark plugs, for use in Liberty engines. That was the beginning of a long series of triumphs shared by AC Ceramic Aircraft Plugs, including those of Lindbergh, Acosta, Maitland, Byrd and, in 1944 and 1945, the cross-country records established by the Constellation and the C-97. Their war record is no less brilliant, in the air forces of all the Allied nations.

In automotive fields, AC pioneering has consistently shown the way to better spark plug design and performance, revolutionizing construction with the one-piece plug, improving quality through metallurgy, ceramics, and engineering.

Engineers of 2 out of every 4 cars and trucks specify AC's as standard equipment. In every type of motorized equipment, motor-wise people, the world over, choose AC for *utmost reliability*.

AC SPARK PLUG DIVISION

GENERAL MOTORS CORPORATION

Features of Northwest's New Douglas Airliners

Overall Length—93 feet, 11 inches • Wing Spread—117 feet, 6 inches • Engines—four 1450 h.p. Pratt and Whitney • Cruising Speed—235 m.p.h. • Passenger Capacity—44 to 55 • Cabins—1 forward, 1 aft • Commodious rest rooms and many other modern features that contribute to luxurious air travel.

SPEED FINAL VICTORY—BUY WAR BONDS

SEPTEMBER, 1945 Use postage-paid card inserted in this issue at page 59, for free information on advertised products

AC  
**SPARK  
PLUGS**

## PRESSURE TESTING HEADS AND BLOCKS

(CONTINUED FROM PAGE 144)

sure controlled by the welders oxygen regulator which has been connected into our shop air line which carries about 90 lb. at all times.

### Effectiveness of Liquid Seals

JUST as we have tested out the ability of the wooden plug to stay put with pressure behind it, in the

same way we have tested out the liquid seal, and found some of them will stay put regardless of the high pressure we have used to try and drive a leak through them. Further, more than 200 jobs have gone through the last winter—bronze welded, made tight with liquid seal and with anti-freeze in the water jackets—and no comebacks due to the anti-freeze dissolving the liquid seal.

While the pouring of steaming hot water into a head or engine block may seem rather risky, it has been

done many hundreds of times without damaging the part subject to this sudden increase in temperature. Cold water poured into a hot engine will no doubt raise havoc, but hot water in a cold block, (by cold I mean room temperature), has caused no trouble to date.

Fig. 10 not only shows another block under test, but illustrates another important advantage of unpreheated bronze welding. Jobs done in the fire at a high temperature for the entire head require the removal of the valve guides and stud bolts—which means the replacement of these parts and retapping the holes for the stud bolts after the welding repair. What happens to the six hardened steel screwed type valve inserts during this operation I am not prepared to say.

But on the job shown above, and all others bronze welded at room temperature, these hardened steel valve inserts are not at all affected. Instead of removing all the stud bolts and valve guides, just one JUST ONE valve guide in the path of the weld was removed, as shown.

Some day we will look upon the oxyacetylene welding torch as just a superheated soldering iron, doing just a hard soldering job—which is all that bronze applied to cast iron with the torch really is, with no more preheating being done for this work than is done and has been done for years with the tinsmith's soldering iron.

### END

(Please resume your reading on P. 96)

Ted E. Allen leaves the American Automobile Assoc., Washington, D. C., to accept an important executive position with the Brake Lining Mfrs. Assoc., New York, N. Y.



In this war landing vehicles were hospitalized too! Here are two such weapons of war heading toward Pacific action after being reconditioned in Sacramento. Hauled on one of the Wilkins Draying Co. heavy Macks, the load measured 52 ft. in length and 10 ft. wide. Special permission from highway authorities was needed before the run of more than 100 miles could be made.

MORE THAN JUST  
A PATCH—IT'S A  
PERMANENT  
REPAIR

### The Dillectric Method

Fills, reinforces, vulcanizes  
the tube injury completely safe.

MIGHTY CONVENIENT  
TO APPLY, TOO—  
A SPEEDY, PROFITABLE  
SERVICE

### THE "KNOW-HOW" WAY TO REPAIR *Synthetic* TUBES

There's one sure way to avoid the failures generally experienced with ordinary types of repairs in synthetic rubber tubes. It's the quick, simple, "know-how" Dillectric method, now so popular with fleet owners and service stations, everywhere.

With Dillectric, anyone can do a guaranteed repair job in a few minutes. Speedy, convenient, and low in cost. Dillectric completely fills, reinforces and vulcanizes the tube injury securely. A 100% job is assured by the handy automatic time and temperature controlled, electrically heated patch unit as used with the Dillectric pressure clamp.

More than just a patch—Dillectric is a permanent repair for either synthetic or natural rubber tubes. That's why thousands of fleet owners and service stations use this handy repair method. A post card will bring you full information.

### THE DILL MANUFACTURING CO.

700 East 82nd St.

Cleveland 8, Ohio

INSTRUCTION FOLDER  
Free ON REQUEST

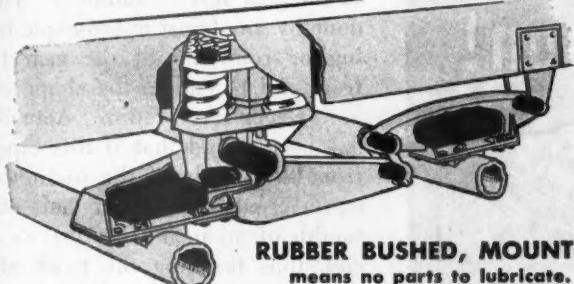
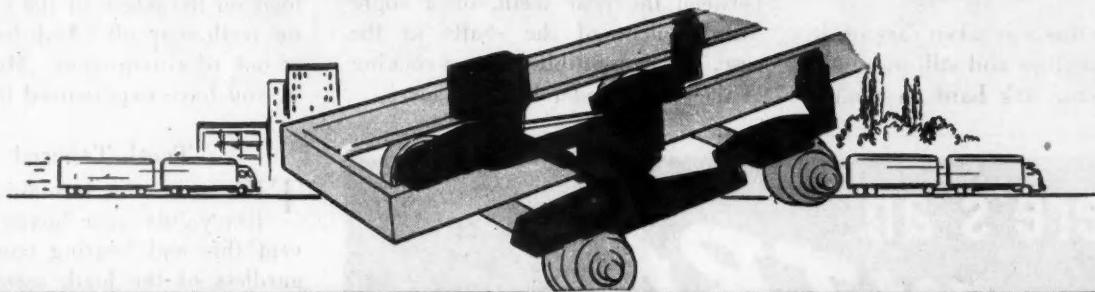
Write, now, for the Dillectric Instruction Manual which pictures and describes in detail the proper preparation and vulcanization of synthetic tubes.

**DILLETRIC**  
REG. U. S. PAT. OFF.  
*Electrically VULCANIZED*  
TUBE REPAIRS

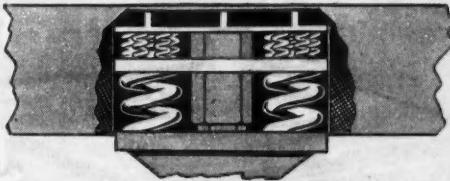


**BIGGEST**

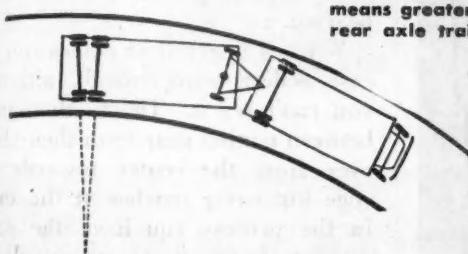
# FEATHER RIDE TRAILER SUSPENSIONS PUTS ALL TRAILERS ON THE PAYLOAD



**RUBBER BUSHED, MOUNTED**  
means no parts to lubricate.

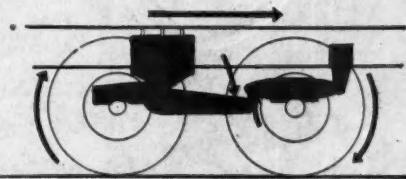


**UNDERLOAD SPRINGS**  
means feather-like ride for  
empty van bodies and tankers.



**AUTOMATIC STEERING**  
means greater tire mileage,  
rear axle trails front axle.

**BRAKE TORQUE LOAD IN BALANCE**  
means no kick-up of rear axle, no skidding,  
even on fast stops.



● Here is engineering distinction that speaks out for itself. All the weight-consuming gadgets have been weeded out to produce lightness in a running gear of engineered simplicity. Feather Ride transfers hundreds of pounds of cost load to PAY load, provides feather-like rides for empties and overloads, reduces tire scuffing, prevents rear axle kick-up, eliminates risk of lubrication failures and sets up new ideals in efficient trailer transportation.

If you own trailers, build them, or service them, we suggest you get the full story of Feather Ride—NOW!

DUAL AND SINGLE AXLE TRAILER SUSPENSIONS • AXLES  
BRAKES • FIFTH WHEELS • FULL TRAILER DOLIES

## WRITE FOR ILLUSTRATED FOLDER

Manufacturers, Rebuilders, Rim and Wheel Specialists and Fleet Owners! Write or wire us today about the complete Feather Ride line, about sales and representation. There is room for you in this biggest news in trailer history.

F R

Copr. 1945. Feather Ride, Inc.

## SHAVING GEAR TEETH TO END "END BEARING"

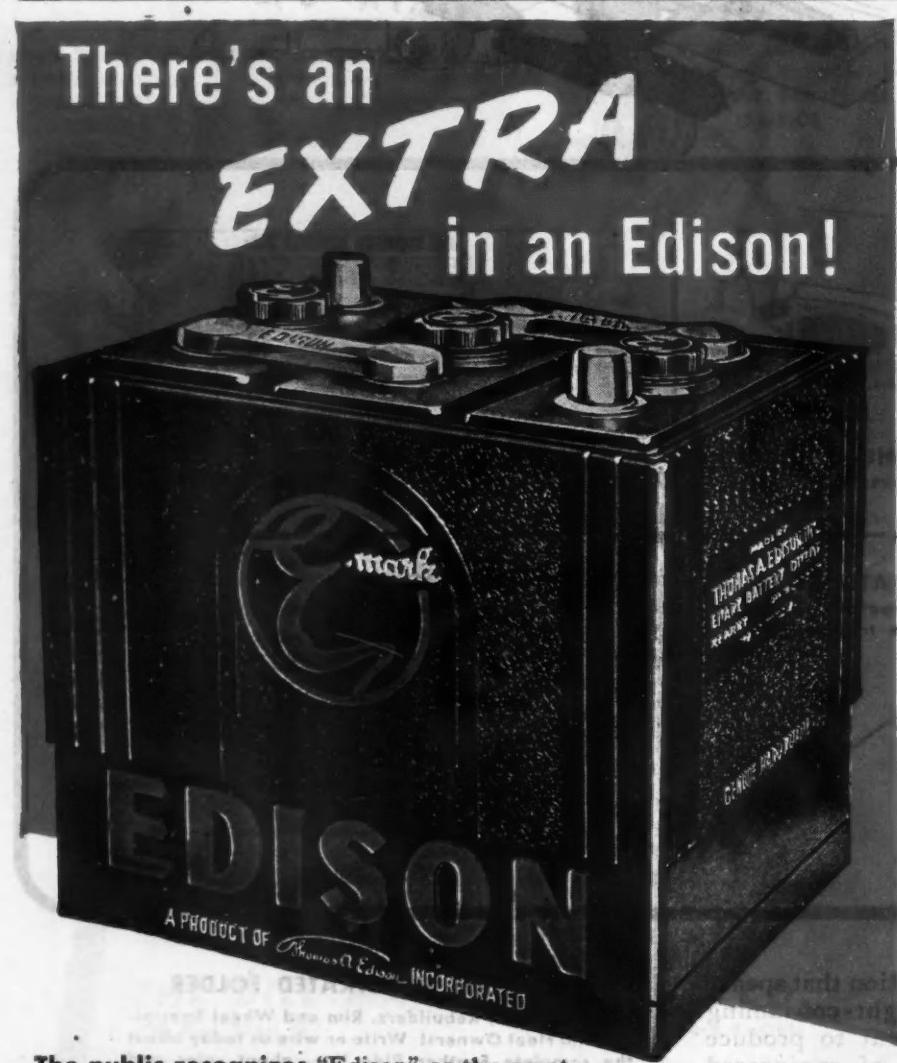
(CONTINUED FROM PAGE 69)

could devise were no cure for gear failures, if there were not the necessary perfection of the manufacturing details required to assure the proper contact area. For that's what carries the load.

But when this was taken care of, it uncovered another and still more serious problem. It's hard to realize

that the husky gear box in a heavy-duty truck is actually an elastic member—almost like a spring under extremely heavy loads. The case tends to give—only a trifle to be sure,—but enough to spring the shafts out of alignment. Other things happen under such conditions. For instance, even a minute clearance between the shaft and its bearings or between the gear teeth, or a slight misalignment of the shafts in the case, will be multiplied into a cocking of the shafts under heavy loads.

This, in turn, throws the gears out of line. What happens then is this: The normal contact area of the mating teeth moves away from the center where it belongs. It moves down to a point where the gears actually contact at their extreme outer edge. The engineers call this "end bearing." No matter how husky you make gear teeth, they can't carry an overload on the edges of the teeth. And the teeth snap off. And the gear box is out of commission. Maybe some of you have experienced this.



The public recognizes "Edison" as the greatest name in electricity—a great name to find on any electrical device. . . . The automotive trade recognizes "Edison" as a synonym for quality, and a promise of dependable service to the dealer and his customers.

Thomas A. Edison Inc.

EMARK DIVISION — PLANT No. 1, Kearny, N. J.

YOU CAN ALWAYS RELY ON AN EDISON



Thomas A. Edison  
FOUNDER

### Tooth Tapered

THE latest trick in making durable heavy-duty gear boxes is to prevent this end bearing condition regardless of the load, assuming that the overload is not beyond the ability of the gear box to handle it. This is done by an almost microscopic tapering or rounding of the gear tooth from end to end in the shape of an arc of very large radius. Actually, it has been found that if this tapering from the center of the tooth to the extreme edge is about half-a-thousandth of an inch (0.0005) on each end, thus thinning the tooth at the edge about 0.001 in. at the most—frequently even less will do the trick—a well designed gear box simply can't deflect enough to cause end bearing.

When a heavy load comes on, the case deflects sure enough, although you can't see it. The tooth contact between mating gear teeth then slides over from the center towards the edge but never touches at the ends. In the process you have the same amount of contact area as you did in good alignment at the center. So the teeth stand up and live to take more punishment.

### IHC Uses "Crown Shaving"

THESE new gear boxes are made in different ways by different manufacturers. We found recently that International Harvester Co. adopted a special method of manufacturing—which, by the by, is well known in the industry—known as "crown" or "elliptical" shaving of gear teeth. With this process the gear teeth are cut in the regular manner but after cutting, and before heat treatment, the gears go to a special gear shaving machine which corrects the dimensions and profile of the

(TURN TO PAGE 150, PLEASE)

THERE'S MORE THAN GEARS IN

# New Process TRANSMISSIONS



All the science, skill and manufacturing experience gained through more than 60 years of gear making is advanced in the design of New Process transmissions. Their war service in all climates, under all conditions, presents an unchallenged record of transmission performance. Throughout the war period, over 500,000 transmissions have been furnished for various types of military vehicles.

#### New Process 1½-Ton Truck Transmission

Four forward speeds and reverse, equipped for double power take-off . . . anti-friction bearings, integral clusters. Ratio designed for quick speed pick-up for ambulances, chemical fire-trucks, combat vehicles, etc. Write for engineering specifications.

**New Process GEAR CORPORATION**

TRANSFER CASES • TRANSMISSIONS • CONSTANT VELOCITY UNIVERSAL JOINTS • AVIATION GEARS • DIFFERENTIALS

Syracuse, N. Y.



## SHAVING GEAR TEETH TO END "END BEARING"

(CONTINUED FROM PAGE 148)

teeth so as to offset the distortion due to heat treatment; and at the same time it does the "crown" shaving or curving of the body of the tooth from end to end.

According to a statement made by IHC, the newly adopted production process gives them the following advantages:

1. Makes the gears more quiet.
  2. Eliminates danger of end bearing.
  3. Irons out errors due to distortion in heat treatment.
  4. Assures improved and unvarying contact area between mating teeth.
- In addition, this procedure reduces manufacturing costs by reducing rejects in machining and by eliminating defective gear boxes in the assembly department. Naturally, every one of these advantages is of direct interest to the man who buys and runs them.

IHC first began experimenting with this development back in 1939, and has been studying the art since then—on the road and in the experimental department. Owing to this long background of experience, this company has been able to adopt the new method for all its gear production with complete confidence.

IT MAY be mentioned that no single item alone is responsible for making a heavy-duty transmission that will stand the gaff. "Crown" shaving alone will not do the trick. It takes the combination of good materials, properly treated; precision methods in the machining of cases, shafts and gears; careful assembly procedures; modern metallurgical control and heat treatment; quality control; and a lot of other things that go with modern manufacturing methods. It takes all of these properly blended with good engineering to do the trick.

**END**

(Please resume your reading on P. 70)

**EBERHARD ...  
EVERYTHING for the  
BUS BODY!**

Among several items in the Eberhard Catalog adaptable to busses, these numbers are especially popular.

And, there are assortments of fittings for every other type of vehicle.

Consult the Eberhard Catalog regularly.

**EBERHARD TRUCK BODY FITTINGS**

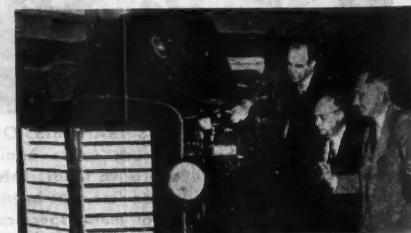
EBERHARD MANUFACTURING CO.  
Division of the Eastern Malleable Iron Company • CLEVELAND, OHIO

**E**



Clayton Farris, president of the Trucktor Corp., Newark, N. J., also heads the newly organized Davisbilt Products Co., Cincinnati, Ohio

William F. Costello, director of the New Britain Machine Co. and vice president in charge of wrench sales, died of a heart attack, July 25. Mr. Costello, age 56, was one of the founders of the Service Tools Institute



Ted V. Rodgers, top left, president of the American Trucking Assn., and L. V. Lawrence, right, managing director of the Associations' executive staff, are shown listening to Carl Loud, center, sales manager of the Federal Motor Truck Co., explain the safety features of the multiple fuse electrical system on a new heavy duty Federal truck just off the production line

# GUNITE



MILL BEAR DRIVE-OVER

## BRAKE DRUMS

### USE TELLS

As near as we can tell, we have produced well over a million GUNITE Brake Drums since we first introduced them fifteen years ago.

Today, among the buyers of brake drums who are the most particular—the operators of commercial trucks and trailers, and the superintendents of intercity bus and traction companies—we are pleased to find that GUNITE drums are held in high regard.

We are pleased to find that time, which alone could do the job, has proved the points of superiority we have always claimed for GUNITES. We are pleased that actual use in the roughest, toughest

kinds of automotive service has justified our contentions, exaggerated though they may have seemed.

For we set out, 15 years ago, to make better brake drums by taking an engineer's point of view. Instead of saying, "Here is a price; we must meet it", we said, "Here is a job; we must do it". And we proved that GUNITES, while they cost more, were actually *cheaper in the long run* than ordinary drums that were not engineered to the job.

It has taken time to prove our points, because the ultimate cost of GUNITES must be figured over a period of use and service. Now we see company after company, having completed the tests we urged them to undertake, standardizing on GUN-

ITES until our customer list looks like Who's Who in Automotive America.

Topping this gradual and encouraging growth of acceptance is our new Direct Factory Shipment Plan which offers even further savings. Ask your regular jobber about this plan today!

Thus the growing use of GUNITES tells the story of the success of an idea that was originally conceived and aimed to give you better brake drums at lower cost.

MADE BY  
**GUNITE FOUNDRIES**  
ROCKFORD, ILLINOIS



**GUNITE BRAKE DRUMS...FOR TRUCKS, TRACTORS, TRAILERS, and BUSES**

## QUIZ ANSWERS

CCJ Quiz on Page 87

1. a. Your truck can have a "blood test" that will tell the expert just what is ailing. The "blood" is a sample of the motor oil circulating in the engine. Deposits in the oil enable the trained analyst to spot such things as loose cylinder head gaskets, bad timing, too high local piston heat, ring scuffing, and dozens of other ailments.

2. d. Polarizing screens over headlamps plus polarized goggles for drivers will put an end to glare. The two polarizing planes facing each other are thrown "out of phase," while the illumination on the road is perfectly clear.

3. b. The war has shown the advantage of powder metallurgy . . . the molding of parts from metal flour. Terrific pressure is applied and then the parts are baked in electric ovens. Production rate is ex-

tremely fast, there is virtually no material waste, and tolerances can be held very close.

4. b. Polystyrene plastic battery containers, already in use on some Army vehicles, are transparent, and the level of the electrolyte can be checked visually. Polystyrene is said to be immune to the corrosive effect of the electrolyte, lighter than glass, stronger than hard rubber, and readily molded to the desired shape.

5. c. Electronic ignition systems technically will work perfectly at any driving speed. But there's one big BUT. The cost, as of today, is prohibitive. An electronic system requires about 100 volts to operate and most trucks are equipped with no more than a 6 or 12 volt system.

6. b. The Sheffield Corp. of Dayton, Ohio, has developed a machine that eliminates the human element in the checking of piston rings. The piston ring to be checked is inserted inside a master ring. Beams of light directed against phototubes do the checking. Any error in the periphery of the piston ring or in the width of the gap allows light to pass through, actuating a colored signal light.

7. a. A power take-off that can be used with a spline shaft for direct power or with a belt pulley will make the Jeep a real handyman around the farm.

8. c. Pure silver and silver-lead alloys have found an important place as bearing materials for airplanes and Army vehicles. Ford experimental laboratories are supposed to have developed a bearing of lead, silver, iron, and copper that shows no measurable wear after 50,000 miles of heavy-duty use.

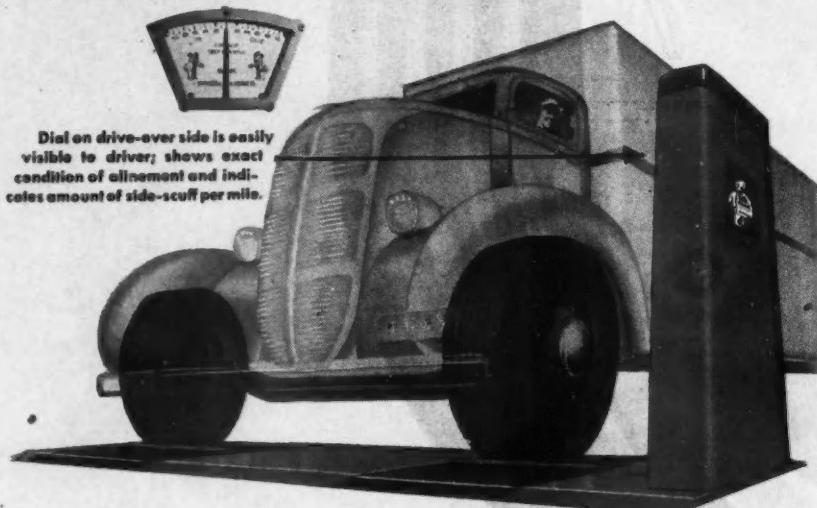
9. c. Tire men say that butyl is less porous, thus holding air better.

10. a. The Galvin Mfg. Co., developer of the walkie-talkie and the handie-talkie, is experimenting with mobile radio communication for trucks. At any rate, you will have some kind of radio communication for trucks. The ATA has applied for an FCC license for experimental operation in the Chicago area, and Bell Telephone Co. of Pennsylvania is expecting to have radiotelephone service available for trucks even before the end of the year.

END

(Please resume your reading on P. 88)

**Save Tires—Save Time—Cut Operating Costs—Reduce Accidents**



with BEAR DRIVE-OVER

*Alinement Gauge!*

The quicker, modern, more accurate way to make  
"Every-Trip" check-ups on front and rear wheel alinement!

Frequent Wheel Alinement Check-Up is the proven answer to thousands of more miles from every tire! Now, with the Bear Wheel Alinement Gauge, you have the one answer to getting this check-up made so quickly and easily that it's practical to make

### "EVERY-TRIP" CHECK-UPS!

Bear's Drive-Over Alinement Gauge provides the only check-up made under actual driving conditions with and without load . . . the only test for front and rear wheels where the vehicle is in motion.

### SEE YOUR BEAR SERVICE MAN

Fleets should have one or more of these Alinement Gauges at terminal points! Actual correction work when needed can be performed for you as it is for hundreds of other fleet operators, by local Bear Service Shops!

SEND TODAY FOR COMPLETE DETAILS  
on the BEAR ALINEMENT GAUGE

There's no cost or obligation involved in investigating . . . and once you have the facts, you won't want another day to pass without the Bear Alinement Gauge!

BEAR MFG. CO., DEPT. CCJ • ROCK ISLAND, ILLINOIS

836 F.O.



**BEAR**

WHEEL ALINEMENT . . .  
BALANCING . . .  
FRAME STRAIGHTENING

# PURITAN

*Returns to Peace*



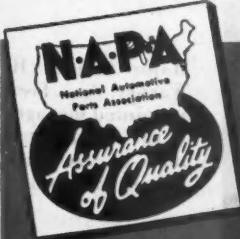
NORMAL DELIVERIES  
NORMAL STOCKS  
BETTER-THAN-EVER QUALITY

Puritan turns its back on War.  
Now that it has done its part  
for victory, Puritan faces the  
peacetime future with sleeves

rolled up to better serve the needs of the motoring public.

Look to Puritan for improved automotive chemical Products —  
shipped to you from ample stocks as you need them.

Get your supply of Puritan Brake Fluid, Gaska-Seal, Shock and  
Knee-Action Oil and the other Puritan Automotive products that  
mile-starved motorists will need.



**PURITAN COMPANY, INC.**  
ROCHESTER, NEW YORK



## THE LOAD IS THE KEY

(CONTINUED FROM PAGE 56)

### Variables Not Considered

THESE graphs and the accompanying analyses are based on average conditions, for simplicity. Such items as: Tire pressure, vehicle speed, rim type and spacing, matching of "duals," ambient air temperature, relative humidity, wheel alignment, brake adjustment and other variables which affect tire life in certain oper-

ations are not considered here. They represent items which should not be overlooked in any complete analysis of tire economy but which go beyond the scope of this article. Each operator would do well to consider each of these items separately in regard to how it may affect the performance figures previously presented. Tire manufacturers have published charts and tables showing the effect of these variables on average performance of their tires.

Another refinement of these graphs that should be made for specific operations is consideration of loadings in terms of axle loads instead of total vehicle loading, especially where the type of load carried results in uneven distribution. Decrease in the load during a given trip and an "empty return" will further affect the average figures and chartings presented here. A true picture, especially where the variation in tire loading is great in a given round-trip, must be based on weighted average loadings. A formula for determining such a weighted average is:

If X equals Total Possible Distance, Out and Back

Y equals Distance Empty, or Partially-Loaded

Z equals Distance Fully Loaded

$$2 \times Z \times Y$$

Then X equals —

$$Z + Y$$

As an example: Assume that the particular set of tires will be good for 180,000 miles, if the truck were empty all the time, and for only 30,000 miles under constant full load. Then:

$$2 \times 30,000 \times 180,000$$

X equals ————— or,  
30,000 plus 180,000

X equals 51,429 miles per set of tires.

This means that 51,429 miles should be substituted for 30,000 miles wherever the latter is used on the graph, for a true picture of payload ton-mileage maximum.

Those of us who automatically accepted normal loading or slight overloading as the key to maximum tire economy will have to revise our thinking. Until someone comes forward to disprove the facts presented, an underloading of from 10 to 20 per cent seems to offer the best means of getting the most out of every tire dollar.

END

(Please resume your reading on P. 57)



Major Charles H. Warner has been appointed manager of the Washington office of the Clark Equipment Co.

## Road Proved BY MEN WHO USE THEM!

KAW TRANSPORT COMPANY  
Highway Motor Transit

501 Cambridge Avenue  
KANSAS CITY 3, MISSOURI  
Phone Clewneur 5803

FRED R. SUDDARTH, Pres.-Treas.

June 22, 1945

512 North Sterling Avenue  
SUGAR CREEK, MISSOURI  
Phone Clifton 6714

American Safety Tank Company  
2814 Mercier  
Kansas City 8, Missouri

Gentlemen:

So much can be saved by so little investment that we feel that American Safety Tanks for our tractors are a "must" item.

Over a period of fifteen years in hauling inflammable we can recall a number of accidents that might have been catastrophes had it not been that the tractor supply tanks were sturdy enough and so well constructed that they did not leak or spill and cause fire.

During this time of irreplaceable units we feel that American Safety Tanks are almost a prerequisite for existence - and they seem never to wear out.

Our recollection is that you were the first to build really safe gasoline tanks and I wish every vehicle in the country had them. As a user for many years, I can appreciate their value for individual and public safety.

Yours very truly,

KAW TRANSPORT COMPANY  
Fred R. Suddarth,  
President



American Safety Tank Co.

UNDERWRITERS LABORATORIES, INC., A. U., 1302

U. S. PAT. NOS. 2090197 & 2268697

KANSAS CITY 8, MISSOURI, U. S. A.

## MAINTENANCE CONTROL BOARD

(CONTINUED FROM PAGE 84)

sheet provides a six-month record for each vehicle—three months on one side and three on the reverse side of the same sheet.

The other form we use is shown in Fig. 2. A separate sheet is maintained for each vehicle in the fleet. The sheet is divided into 32 sections, 16 front and 16 back, each section being a separate record for the 27 operating parts replaced periodically and for other data we wish to record.

Each section provides a complete maintenance and performance record of the particular part. The determined average mileage life figure is noted in the upper left hand corner of each section, which, in the case of a certain air compressor may be 40,000. Under "change mileage" the set-up mileage is inserted. This is determined by the figure shown under "determined mileage" plus mileage at the time work is done, as shown by the example.

It is very easy to list the mileage of each vehicle separately once a week. A glance at the accumulated mileage figure and the change mileage figure shows immediately which part is ready for posting on the board. As work is accomplished, which is shown by the shop's daily work cards, the pins denoting units to be replaced are removed and remain out until any of the parts have again reached their determined mileage.

### Fleet Condition Improved

AFTER the board was installed, Mr. Reaves assigned certain mechanics to maintain certain groups of vehicles and encouraged them to use the board at all times, which they do. Keen rivalry has resulted in maintenance records between the groups. When there is a road failure, the mechanics assigned to the group responsible for that vehicle are in for a lot of kidding from rival groups.

In addition to the office and shop time saving advantages, the board's use assures us that all necessary work will be done. The overall picture as shown by the Maintenance-Tel-Board is of great value in determining the future outlay of work, and its alloca-

tion to the various groups of mechanics.

When the board first was completed, there were 300 red pins on it, indicating that far too many parts and assemblies were overdue for overhauling or replacement. At this writing, 10 months after the board was put into use, there are about 30 pins and this number is being rapidly reduced. Furthermore, when the board was installed, 102 of 105 vehicles showed one or more units requiring replacement. Now, with the

fleet increased to 115, 55 show no red pins.

Superintendent Reaves declares that, without the use of the board, he believes that there still would be the same number of units on as many vehicles requiring attention as before the board was placed in use. He estimated that road failures have been reduced by two-thirds since the board has been in use.

END

(Please resume your reading on P. 87)

H E R C U L E S  
FOR THE  
**BIG**  
JOBS!

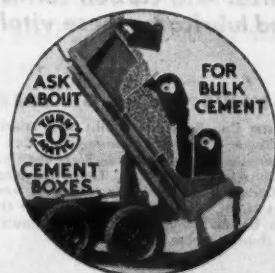
For any trailer  
or semi-trailer  
with any make  
of fifth wheel



On the heavy, tough jobs—that's where a Hercules body proves itself! Big loads, punishing service, continuous operation . . . that's the type of work where Hercules' built-in stamina shows up. Designed and built for heavy-duty service, Hercules dump bodies are available for installation

on any make of trailer or semi-trailer.

Collect dividends through more and bigger payloads, lower cost operation. Your Hercules distributor is prepared to supply complete information and service. See him today for complete details about the features that only Hercules can deliver.



**HERCULES**  
DUMP BODIES AND HYDRAULIC HOISTS  
SPLIT SHAFT POWER TAKE-OFFS • COAL CONVEYORS

Ask About Turn-O-Matic Cement Boxes for Bulk Cement—Now Available—Write Today!

HERCULES STEEL PRODUCTS COMPANY . . . GALION, OHIO

## PROSPECTS FOR POSTWAR TRUCKS (CONTINUED FROM PAGE 38)

industry feels that truck rationing will stay for at least a few months yet. There was some sharp division of opinion on the effectiveness of ODT in expediting distribution, but most spokesmen thought that the present system of delegating authority to field offices to ration light and medium trucks is a step in the right

direction and that rationing should be kept until supply and demand are in better balance than at present.

### No Design Change Till 1947

TRUCK manufacturers do not envision any major changes in truck design until the 1947 models appear. While all have ideas, many of which are partially developed, they feel that their efforts now should be directed entirely toward full-tilt production of current models. Any changes in de-

sign at this time would slow production schedules when the crying need is for all the trucks that can be turned out.

However, they promise that eventually a much improved product from the standpoint of styling, comfort, and serviceability will be forthcoming. Among the features scheduled for postwar trucks are better brakes, more automatic transmissions, lightweight construction at no sacrifice in sturdiness in order to provide more payload capacity, easier handling through power boosting devices, and many others.

END

(Please resume your reading on P. 39)

## DETAILS OF "DUCK'S" TIRE PRESSURE CONTROL

(CONTINUED FROM PAGE 57)

used to shut off one or any combination of air lines to the tires in order to maintain pressure or to force more air to a damaged tire.

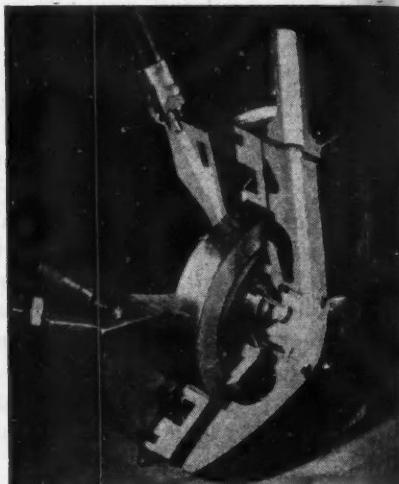


Fig. 3. Air seal of hub consists of a rotating nose piece, stationary plastic disc, a special precision bearing

## JUDGE by the testimony of SATISFIED USERS

"the proof of the pudding is in the eating," runs an old adage

LUBRI-GAS USERS PRAISE IT TO THE SKIES,

**There's bound to be a reason!**

- ANTI-FRICTION
- ANTI-KNOCK
- ANTI-CARBON
- ANTI-SLUDGE



**LUBRI-GAS**

MOTOR FUEL LUBRICANT



"Our experience with Lubri-Gas has been completely satisfactory; not only have we used Lubri-Gas in our trucking equipment, but also in our mining equipment consisting of draglines, loading shovels, road-grading equipment, and bulldozers."

G. & F. Corporation  
Brazil, Indiana



"Lubri-Gas performs, especially in trucks and tractors where more power is necessary. Tractors powered by Lubri-Gas can do the same work with one gear higher."

The Golden West Petroleum Co.  
Salina, Kansas

Where heat is intense friction is greatest and carbon forms from burning fuel. Lubri-Gas cleans and lubricates these vital spots as it powers your motor.

THERE'S NOTHING ELSE  
LIKE IT

GET THE FACTS  
TODAY!

Write for interesting literature that  
can save you many costly repairs.  
IT'S FREE...

### AMONG TODAY'S USERS OF LUBRI-GAS

International Harvester Co., Rock Island, Ill.; Rock Island Arsenal, Rock Island, Ill.; Stone & Webster Construction Co., Knoxville, Tenn.; Osman & Norman, Madison, Wis.; State and County Highway Divisions of Illinois, Indiana, Ohio, Texas, Montana, Kansas, Iowa; Yellow Cab Company, Louisville, Ky.; Memphis Army Service Forces and Various U. S. Army Engineers and Other U. S. Army Divisions; Schulze Baking Company, Chicago, Illinois; Keeshin Motor Express Co.; Huber & Huber Motor Express.

**LUBRI-GAS**

221 No. LaSalle St., Chicago 1, Ill.

END

(Please resume your reading on P. 58)

# An OUNCE of Prevention!



Installing Marman Universal Hose Clamps on Santa Fe Trailways' great fleet of busses is just one of many precautions Santa Fe maintenance men take to assure utmost safety and performance. There are 103 clamps on each big Trailways bus and each one has an important job to do.

The Marman Universal is made of stainless steel for corrosion resistance and long life. It's vibration proof, thus offering a new degree of safety. Exclusive swivel action nut permits easy installation or removal — mechanics get it on right the first time! The clamp can be used over and over without efficiency loss. Three sizes handle all hose diameters  $\frac{5}{8}$ " to  $3\frac{1}{8}$ " O.D.

Marman also makes other types of clamps, including the popular Quick-Coupler, in both stainless steel and aluminum alloy, in a complete range of sizes and shapes to fit any convex surface.

Call your  
Jobber or  
write today  
for new folder  
Series 820



**MARMAN**  
PRODUCTS CO. Inc.

940 WEST REDONDO BOULEVARD  
INGLEWOOD, CALIFORNIA

KEEP 'EM ROLLING  
BUY MORE BONDS

## CCJ NEWSCAST

(CONTINUED FROM PAGE 108)

### ACWP Offers Trucking Booklet

The automotive Council for War Production has compiled some of its recent articles from Automotive War Production into a 20-page booklet. This illustrated publication offers several articles depicting the battlefield and home-front jobs of motor trucks. Mats of the illustrations are available upon request, as are free copies of

the booklet. Address the War Production Information Dept., Automotive Council for War Production, Room 320, New Center Building, Detroit 2, Mich.

### Factory Appointments

Herman J. Loebel, as manager of distributor's service sales, Waukesha Motor Co.; and Harvey R. Wilson, as assistant service manager.

Joseph Elliott of Minneapolis, salesman for Petroleum Solvents Corp., New York.

Harry A. Mack, as regional manager of the Ford Motor Co., with headquarters at Dallas, Tex.; Harold K. Turner, as manager of the Ford Dearborn branch.

Jason W. Frye, as special truck representative for the Studebaker Corp., in Dallas, Tex.

H. E. Simi, in charge of bus engineering and production, Kenworth Motor Truck Corp.

Earnest E. Arrington, as manager of camelback, repair materials and accessory sales of the replacement tire division of B. F. Goodrich Co.

G. E. Jackson, as regional manager of Kelite Products, Inc., Los Angeles, Cal.

E. M. Schulthesis, as manager of automotive sales, Clark Equipment Co.

F. E. Williams, as general sales manager; and C. E. Sexauer, as service manager of the Zenith Carburetor division of Bendix Aviation Corp.

J. H. Burton, Jr., as district representative in the southeastern territory for the Schrader Co., Brooklyn, N. Y.

D. J. Noland, as district manager in the Wisconsin territory for the Monarch Governor Co., Detroit, Mich.

M. A. MacConnel, as Detroit district manager in charge of sales for the U. S. tire division of United States Rubber Co.

H. E. Nye, as manager of Delco Battery operations to succeed B. A. Dollens, who became general manager of the Saginaw Malleable Iron Division.

(TURN TO PAGE 162, PLEASE)

### KING-SEELEY ELECTRIC TELEAGES ARE RELIABLE AND DURABLE

There are certain engineering and construction features of automotive dashboard instruments that experience has shown are necessary to make them reliable and durable.

They must be able to withstand voltage variation. Telegages operate within a range of from 4 to 9 volts.

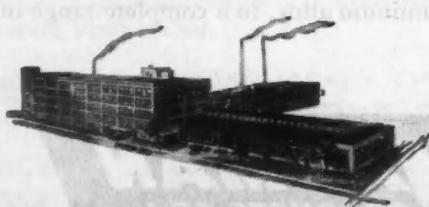
They must be able to withstand vibration. Telegages are tested on a machine that vibrates in two planes up to 6000 rpm.

Diaphragms are made of metal capable of withstanding 10 million stress reversals through the entire pressure range and metal floats retain their buoyancy indefinitely.

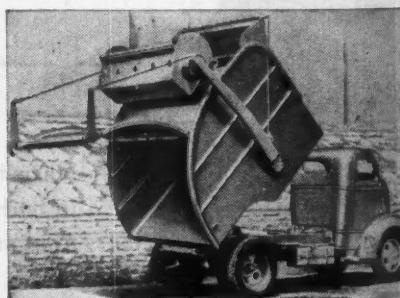
Telegages will operate at temperatures from -10° F. to 125° F. with an overall loss in accuracy of not more than 4%.

Spun glass insulation on electric circuits provides adequate protection against damage from temporary "shorts".

Tank arms and bearings are corrosion resistant to prevent sticking.



 KING-SEELEY  
CORPORATION  
ANN ARBOR, MICHIGAN



This new, fully enclosed sanitary refuse body was designed and produced by The Heil Co., Milwaukee, for post war municipal service. It features a traveling bucket with a low (35-in.) loading height, a large compressor plate which packs 20 yd. of wrapped garbage into a 10-yd. body, and raises it to a 45-degree dumping angle in 12 sec. Three hydraulic cylinders control all operations.

# IF YOU DESIGNED YOUR OWN PISTON RINGS



TOMORROW'S  
TODAY!

A different type ring for each groove — each ring has its job and does it — delivers FULL POWER.



## You Would Want These **FULL POWER** Features

1. Low Unit Pressure.  
(no hammer handle installation).
2. Flexibility.
3. Oil Control on Metered Lubrication.
4. Battleship Oil Ports to prevent Carbon Clog.
5. Immediate Seating.
6. Outstanding Engineering Features to eliminate Costly Comebacks.
7. A different type ring for each groove — so each ring would do a job — and that job would be to deliver **FULL POWER** in worn motors.



### LEADERSHIP IN SPRING SUSPENSION SERVICE



Springs where Springs are used. Coil Action where front end parts are used.

Check Moog X-Plus Piston Rings — see if these seven steps of ring design don't meet your own specification. Write for Moog **FULL POWER** story today.

## CCJ NEWSCAST

(CONTINUED FROM PAGE 160)

### Marmon-Herrington Announces New Models

With the announcement of new heavy duty all-wheel-drive trucks for civilian purposes, postwar planning takes definite action at Marmon-Herrington Co., Inc., Indianapolis, Ind.

Production is scheduled to start in October and will be concentrated on



Marmon-Herrington Model MH555-4  
all-wheel-drive. G.v.w., 27,000 lb.

**Little Known facts  
of a well-known product**

**THE DRIVE SPRING  
DESIGNED,  
PRETESTED  
AND BUILT  
FOR LONGER LIFE**



Another example of the creative engineering that marks the efficient operation and outstanding construction of the Bendix\* Drive is its Drive Spring.

Made from a special spring steel . . . thoroughly heat-treated before winding . . . pretested against distortion and breakage—these are a few of the outstanding features of the Drive Spring.

During the cranking operation, the

Drive Spring is completely protected by being fully compressed. Thus is assured longer life and better drive service.

For quick identification and your protection, the Spring and other Starter Drive parts are packed in the well-known blue and white Bendix boxes.

Remember—the name Bendix is your assurance of durable construction and customer satisfaction.

*Listen to "MEN OF VISION" every week over CBS.*



# Bendix Drive



ECLIPSE MACHINE DIVISION, ELMIRA, NEW YORK

two models—Model MH555-4 and Model MH440-4. The larger of these, Model MH555-4, will be powered by a 131 hp. engine, on a wheelbase of 161 in. Slightly smaller, Model MH440-4 will be powered by a 118 hp. engine, on a wheelbase of 158 in., with a permissible gross loaded weight of 22,500 lb. on 10.00 x 20 tires. Both models will have 10 forward speeds and 4 reverse.

#### New Features

Retaining many features which Marmon-Herrington has pioneered in the multiple-wheel-drive field—low center of gravity, greater approach angle, constant velocity steering and joints, etc.—these all-wheel-drives will embody other design and construction refinements including new double-reduction axles, powerful air brakes and a new steering gear design which makes for easier and more positive steering control.

#### Cabs Redesigned

Cabs in both models have been redesigned and streamlined for greater comfort and beauty. They are of the closed coupe type with individually adjusted seats for driver and passenger. Wider, more graceful fenders are not only better to look at, but provide greater protection.

These new 1945 models will have an abundance of power and are especially suited for arduous duty where power, traction, stamina are must requirements—for work such as snow removal, off-the-road oil surveying and drilling, mining and logging operations, heavy earth-moving and construction work.

(TURN TO PAGE 304, PLEASE)



**Model M12-18B**  
(Illustrated above)

This is one of the distinctively new models in the BRADEN "M" Series. It has a rated capacity of • 25,000 lbs., and has new safety features that have never before been attained.

The M12-18B is equipped with the new OIL-COOLED FULLY ADJUSTABLE AUTOMATIC BRAKE which keeps a suspended load safely under control at all times. Write for Bulletin No. M12-18B-4409.

The engineering skill developed in over 20 years of manufacturing winches exclusively, plus actual use under all kinds of conditions, have proved the soundness of BRADEN Winch design. And, because of the simplicity of their design, BRADEN Winches have given users trouble-free service over a long period of time, even on the toughest handling jobs.

When you need a truck winch that combines power, safety and ruggedness, with economy and dependability . . . specify BRADEN. See your nearest BRADEN Dealer, or write to the factory for complete information.

"Buy BRADEN — They are SAFER"

**BRADEN WINCH COMPANY**  
1001 East Admiral Boulevard



TULSA 3,  
Oklahoma

## CHARTING NEW HIGHS FOR POSTWAR GASOLINE

(CONTINUED FROM PAGE 44)

The postwar vehicle will pull the same grade at wide open throttle in third gear at 23 m.p.h. which is 85 per cent faster at a fuel saving of 6.3 per cent. A 6 per cent grade reverses the loading conditions on the engines so that the prewar vehicle will operate at wide open throttle at 13 m.p.h. in second gear while the new one can operate in the same gear at part

throttle at a speed of 13 m.p.h. In this case, there is no decrease in time but a fuel saving of 17.5 per cent.

The actual gains to be realized in any particular operation would depend entirely upon the terrain to be covered and the driving conditions encountered. Estimates of the overall performance to be expected in operating these vehicles for one round trip over the Pennsylvania Turnpike, a distance of 320 miles with maximum grades of 3 per cent, indicate a minimum saving in time of 73 min-

utes and a minimum saving in fuel of 8.2 per cent.

Recent changes in gross weight limits by many states allow increases in payload that will result in lower cost per ton-mile of operation. The possibilities of the new vehicle in this direction are indicated by the fact that calculations show that it could transport 60,000 lb. over the Pennsylvania Turnpike in the same time as the prewar unit at a gross weight of 40,000 lb., and with the same quantity of fuel.

In the previous discussion the engine and fuel have been considered as a unit. This is necessary because it cannot be said that one fuel is more powerful than another. Higher anti-knock value does not in itself produce more power. It merely permits changes in engines or engine operating conditions which result in higher power or lower fuel consumption. To secure the maximum efficiency from either engine or fuel, the characteristics of both must be considered in the original design of the engine and this same consideration must be borne in mind by the operator in his final selection of the fuel to be used in his fleet.

### Postwar Fuel for Prewar Engines

THE necessity for using wartime fuels in vehicles designed for fuel of prewar quality has emphasized the fact that it is uneconomical to operate engines on fuels of lower anti-knock value than that for which they were designed. In order to utilize the postwar fuel most efficiently, consideration must also be given to the present vehicles that must be operated for an indefinite period of time. In most instances these engines can be reworked to some extent to enable them to take advantage of the postwar fuel.

This work, which can be done at major overhauls, will involve changes in compression ratio and possibly spark advance characteristics. The resultant improvement in power and fuel consumption would not be expected to equal those obtained from the newer engines.

An example of the results to be obtained from this type changes is shown in Fig. 4. These data were obtained from another prewar engine used in trucking service. In this engine the gains indicated were secured

(TURN TO PAGE 166, PLEASE)

# Now available

## FOR CIVILIAN USE



● Edwards trailers are now available to operators qualifying under General Conservation Order M-100.

They are designed to be free of all the deadweight it is practical to eliminate. Less deadweight makes bigger payloads at lower operating costs.

Wide frames... full width pick-up plates... Timken tubular axles... straight-end type, heavy duty springs and twenty other features add up to make Edwards your best buy. Write today for further details.

EDWARDS IRON WORKS, INC., SOUTH BEND, INDIANA

# EDWARDS



# "Devil Dogs" and Their "DUCKS"



At Guadalcanal, a Marine Duck hauls a Howitzer from ship to shore to firing line



At Saipan, Ducks churn up coral dust rushing reinforcements to the front line



At Tinian, Ducks do double duty on land and water bringing up vital supplies



At Okinawa, a Duck serves as invasion vehicle for high-ranking Marine officers

GMC started to produce "Ducks" at about the same time that the Marines started to "jump all over the Japs" in the Pacific. Since then, the Navy's amphibious fighters have used GMC's amphibious trucks in a score of successful assaults from Guadalcanal to Guam.

At Arawe and Cape Gloucester, invasion beaches were blasted by a blazing barrage fired from "Ducks" equipped with rocket guns. At Saipan and Tinian, Leathernecks used many of these "landing boats

on wheels" to help stage the surprise attack that put big B-29s within bombing distance of Japan. At Iwo Jima and Okinawa, the Marines were supported by "Ducks" through some of their fiercest Pacific fighting, bringing Tokyo and victory two steps closer.

The GMC "Duck" made an ideal transport vehicle for island hopping "Devil Dogs" because, boat and truck combined, it could follow the fighting through sea, surf, coral sand and jungle swamp.



In addition to being one of the largest producers of military vehicles, over 575,000, GMC is building many commercial trucks for essential users. Civilian GMCS are powered by engines of the same basic design as the famous "270" used in the GMC "six-by-six" . . . the "Workhorse of the Army."

**INVEST IN VICTORY...BUY VICTORY BONDS**



**GMC TRUCK & COACH DIVISION  
GENERAL MOTORS**



HOME OF COMMERCIAL GMC TRUCKS AND GM COACHES...VOLUME PRODUCER OF GMC ARMY TRUCKS AND AMPHIBIAN "DUCKS"

## CHARTING NEW HIGHS FOR POSTWAR GASOLINE

(CONTINUED FROM PAGE 164)

by a change in compression ratio alone and show an average increase of 8.0 per cent in brake hp. 5 per cent in torque and an improvement of 4.9 per cent in fuel consumption.

Recent studies of fleet operation reveal that improper maintenance or maladjustment of such items as carburetors, distributors, and ignition timing can easily cause greater losses

in operating efficiency than can be gained through years of engineering research and development. It is expected that accessibility will be an important factor in the design and layout of new engines and vehicles. This will result in easier maintenance. However, it will still be the duty of the operator to see that fuels, engines, and vehicles are used efficiently and kept in the condition that results in lowest possible cost per ton-mile of operation.

END

(Please resume your reading on P. 45)

## NEW PRODUCTS

(CONTINUED FROM PAGE 61)

colloidal action of the solution is said to form a permanent metallic seal in any block crack and to eliminate leakage from fissures or porosity.

This unit, mounted on rollers, consists of a cabinet, housing one 15-gallon tank with electric immersion heater, a turbine-type pump driven by a 1/3 h.p. 110 volt single phase motor, air control petcock, air pressure gage and 12 ft. of air hose with air connector for final high pressure testing of the block.

The circulator may be used in the servicing of engine blocks without removing the block from the chassis. This unit also offers a simplified procedure for pressure testing of the block.

Use Free Postcard For More Details.

### P135. 9-in. Bench Lathe

Latest addition to the South Bend Lathe Works, South Bend, Ind., line of shop equipment is a V-belt drive, 9-in. precision bench lathe, made for those who prefer the advantages of the V-belt drive. The lathe features four-step, V-belt cone pulleys which provide, with the back gears, either 8 or 16 spindle speeds ranging from 46 to 1176 r.p.m. It is made with either quick-change gear or plain change gear equipment for a wide range of cutting and power longitudinal feeds. Two other models incorporate power cross-feeds.

All models have 9 1/4-in. swing over the bed and saddle wings and 3/4-in. headstock spindle hole with maximum collet capacity of 1/2-in. Choice of bed lengths give maximum distances between centers up to 34 in.

Use Free Postcard For More Details.

### P136. New Base Lubricant

A new internal combustion lubricant, said to have advantages over mineral oil, particularly for cold weather use, has been announced by Carbide and Carbon Corp.

The new lubricant contains no petroleum oils. Its use in engines has been studied for several years in a large number of vehicles, which have covered a total of one and one-half million miles.

(TURN TO PAGE 168, PLEASE)



Many of the Tractors built by the Caterpillar Tractor Company, such as the Diesel D7 shown above working near Cedar Rapids, Iowa, are equipped with RBC HEAVY DUTY ROLLER BEARINGS, designed to take heavy shock loads and to endure years of grueling service. RBC BEARINGS are built to a standard of quality developed by over a quarter-century of experience. Precision manufacturing methods, coupled with the most rigid inspection of raw materials and finished parts, are positive assurance of long, dependable service.

RBC Distributors located throughout the country are ready to serve you.

SEND FOR CATALOG



**ROLLER BEARING CO. of AMERICA**

TRENTON . . . NEW JERSEY

**BLACK & DECKER**  
7" Heavy Duty Sander  
**\$65**

7" Standard ... **\$53**  
9" Heavy Duty... **\$75**



## Gives Paint, Rust, Scale the Brush Off **FAST**

**This Versatile Black & Decker Tool  
Cleans Up Dirty Jobs in a Jiffy!**

Yes, you can clean up many kinds of work with a Black & Decker 7" Heavy Duty Sander. For example, it drives wire cup brushes for such jobs as removing old paint, rust and road tar; scuffing tires for vulcanizing or recapping. And the same tool drives two types of grinding wheels for grinding welds or cutting off rivets, bolts and studs . . . two types of planer heads for body work formerly done with jack plane or adz. . . 19 kinds of abrasive discs for sanding and smoothing fenders, body panels and any other surface.

For a copy of our complete catalog of more than 100 different Black & Decker Electric Tools and over 1,000 attachments, write to: The Black & Decker Mfg. Co., 632 Pennsylvania Ave., Towson 4, Maryland. For help on any tooling problem, call your nearby Black & Decker Distributor.



LEADING DISTRIBUTORS EVERYWHERE SELL

**Black & Decker**  
PORTABLE ELECTRIC **TOOLS**

**For High Speed Work  
Order Black & Decker  
Wire Cup Brushes**

Developed by Black & Decker engineers, manufactured completely in our own plant on special machines, Black & Decker Wire Cup Brushes are definitely better, tougher, stand up longer on cleaning jobs of every kind. Order them by name from your Black & Decker Distributor.

## NEW PRODUCTS

(CONTINUED FROM PAGE 166)

The lubricant can be manufactured to any desired viscosity and is wax-free. Pour-points vary from -30 to -80 deg. Fahr. Flash points range from 300 deg. Fahr. The new materials have densities approximately that of water. Carbon residue values are less than 0.01 per cent, regardless of viscosity. The lubricant is characterized by low change

of viscosity with change in temperature, having viscosity indexes in the range of 140 to 160.

These new lubricants practically eliminate sludge and varnish formation in the engine, according to the manufacturer. Wear of moving parts is in line with wear experienced with ordinary mineral oils. Ease of starting in cold weather is an outstanding advantage.

These compounds are manufactured in two types, water soluble and water insoluble. The latter type is used for

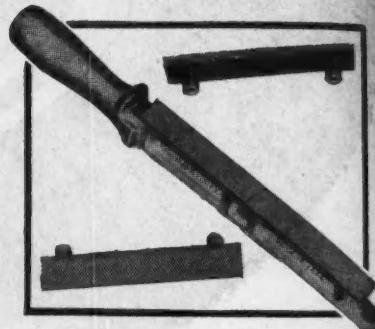
lubricating internal combustion engines. Greases having unusual high and low temperature properties have been prepared from these lubricants.

At the present time, the sale of these lubricants is restricted to war plants.

Use Free Postcard For More Details.

### P137. Lathe File

The development of a new lathe file has been announced by Kennametal, Inc., Latrobe, Pa. The tool is said to provide longer filing surface, quick, easy blade replacement and greater handling convenience.



In this new design the Kennametal blanks have brazed-on nuts and are attached to the light-weight aluminum alloy handle with screws. They can therefore be readily replaced when worn from long service. Two types of blanks—fine (30 teeth per in.) and coarse (20 teeth per in.) are available and are interchangeable on the same handle. The handle grip is shaped to fit the hand and has a thumb rest and a knuckle guard.

One size file is now available—the F-45, 13½ in. long overall—with a filing surface ¾ in. wide and 8 in. long.

Use Free Postcard For More Details.

### P138. Safety Floor Covering

Economy, ease of application and maintenance, plus a high degree of antislip efficiency, are said to be features of Ferrox, a light weight non-slip composition made by American Abrasive Metals Co., Irvington, N. J. This product is a synthetic resin containing an abrasive. It will adhere to metal, concrete, or wood surfaces and may be applied by trowel or spray gun. Where principally foot traffic is encountered, it provides a highly serviceable, low cost safety surface, according to the manufacturer.

(TURN TO PAGE 170, PLEASE)

**You MUST Watch That  
Speeding Problem—**

**—in these Days of Shortages and Rationing**

JOE is a good driver. But once in a while he "steps on 'er" to make up time lost from delays somewhere along the route (not all lost time is his fault, of course). Then what happens? Plenty. Speeding "burns up" precious rubber and gas, and it racks already over-worked engines. Moreover, owing to wartime neglect, roads are not what they used to be—and that doesn't help any. As one plain-spoken truck operator put it—"Speedin'? Every time my drivers do it, my overworked trucks are all shot to hell-and-gone."

There's one sure way to know if your trucks are speeding out on the road—install SERVIS RECORDERS. And about Accident Prevention—ask any insurance company what they think about the Servis Recorder. Send for our special bulletin on Speeding and Accidents. No obligation. THE SERVICE RECORDER CO., 1375 Euclid Ave., Cleveland 15, O.

**The Servis Recorder**  
Helps Prevent Speeding and Accidents

Announcing

# ROBIN RUBBER

*—a new tire-type synthetic rubber that adds miles to your tires*

NOW you can get better truck tires—tires made with a new kind of synthetic rubber—the first major improvement announced by any tire manufacturer since before the war.

These tires are made from a special synthetic rubber using rosin base soap as emulsifying agent.

Discovery of this superior rubber was made in the research laboratories of The B. F. Goodrich Company, and early development was undertaken by this company and others working on the cooperative government synthetic rubber research program. The full scale production of this new rub-

ber and its application for tire use were pioneered by B. F. Goodrich. First tests were so startling that hundreds of tires were quickly built. Now tires made with the new rubber have undergone more than 3,000,000 miles of intensive testing under all road and climatic conditions.

Here's what these tests show as superiorities compared to tires made with ordinary synthetic rubber:

1. greater resistance to cracking
2. greater resistance to bruising
3. cooler running
4. better tread wear
5. ability to withstand higher speeds

All B. F. Goodrich truck and bus tires are now made with this new type rubber. These tires are not as good as natural-rubber truck tires but they are far and away the best synthetic truck tires we have ever built—offering you longer wear and more miles per dollar than tires built of ordinary synthetic.

B. F. Goodrich research continues to improve tires for every purpose. See the B. F. Goodrich man first for help on conservation, for service, for tires.

*Truck Tires* **BY**  
**B. F. Goodrich**

## NEW PRODUCTS

(CONTINUED FROM PAGE 168)

Ferrox has a consistency about equal to fluid paste. It is applied about 1/32 of an inch thick, with a coverage of 50 sq ft. per gal. The covering can be walked on in four to six hours. It is said to withstand weathering and hard usage and to resist oil.

Use Free Postcard For More Details.

## P139. Temperature Control Unit

A thermo-electrical system that keeps the driver aware of the operating temperature of the engine has been designed by the Vapor Car Heating Co., Chicago, Ill. The device is made up of a thermal device with a signal light panel assembly, relay and emergency switch.

As the engine warms to normal temperature, green signal lights flash on. When temperature rises above normal, red signal light flashes on

and off. If the temperature rises more than 10 deg. above normal, the red signal remains lighted.

If the engine is operated after red signal lights, and temperature continues to rise, the relay cuts off the ignition. Emergency hold button permits temporary operation of the vehicle to a parking lane. An alarm bell or a buzzer may be used in place of stopping engine. The device can be installed easily and quickly on any make of truck or bus.

Use Free Postcard For More Details.

## here's a Quick, Effective, Economical CLEANER



- QUICK** — No time lost due to unnecessary scrubbing.
- EFFICIENT** — Cleans thoroughly, easily
- HARMLESS** — Prevents injury to the body finish
- DEPENDABLE** — Designed especially for truck and bus.
- ECONOMICAL** — Saves time and labor.  
No need to wipe down after rinsing.
- INEXPENSIVE** — 4 oz. makes 12 quarts of cleaning solution.

ASK YOUR JOBBER OR WRITE DIRECT

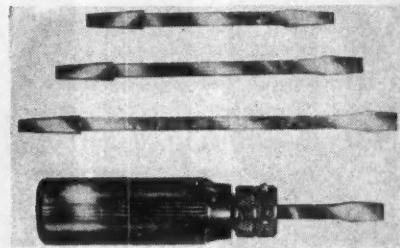
# PROTOL

a product of

JOHN T. STANLEY CO., INC. • 642 West 30th Street, New York 1

## P140. Screwdriver Set

A new type screwdriver has been designed by the Speedway Engineering Co., Los Angeles, as a single tool of many uses. The tool, known as the Day Tool Driver, is made in two sizes. The small size consists of a driver with a simplified locking nut and four blades ranging from 1 1/2 in. to 5 1/2 in. in length. The large size consists of a tool driver with four blades ranging from 8 in. to 14



in. in length. Other tools such as wrenches, hammers, etc., will soon be available to fit both sizes of Tool Drivers.

The driver handle is made of plastic with a simplified locking device that locks the blade in the handle yet allows for its release with a flick of the thumb. Blades are drop-forged from alloy steel.

Use Free Postcard For More Details.

## P141. Valve Facing Alloy

The Eaton Mfg. Co., Detroit, Mich., has in production a new valve facing alloy called "Eatonite," developed to meet valve problems arising from higher operating temperatures.

Eatonite is an alloy containing nickel, chrome, cobalt and tungsten, and is said by company engineers to combine the corrosion-resistant qualities of certain valve steels with the ability of tool alloys to retain shape

(TURN TO PAGE 172, PLEASE)



## PRECISION PRODUCTS FOR POWER



# Proving its name

"NEVERSTALL" is the name of the American Bosch Electric Windshield Wiper. Why *Neverstall*? Because its powerful electric motor drives it at a uniform speed. There is no stalling due to changes in engine speed or load.

For the safety of the driver, truck and cargo, every American Bosch Electric Windshield Wiper must prove its right to its name. In design, in production and in testing, every step is taken to do just that.

Here, for example, an American Bosch craftsman is submitting windshield-wiper motors to a searching test on a cathode-ray oscilloscope. This instrument and associated equipment pick up mechanical vibrations, convert these first to electrical impulses, amplify them, and finally present the visual evidence . . . thus assuring the perfection of every part and of the integrated whole.

Such thoroughness is characteristic of Precision Production for Power. It explains the popularity of *Neverstall* Electric Windshield Wipers and all other American Bosch products.

**AMERICAN BOSCH CORPORATION • Springfield 7, Massachusetts**

**AMERICAN BOSCH**

**AUTOMOTIVE AND AVIATION ELECTRICAL PRODUCTS • FUEL INJECTION EQUIPMENT**

## NEW PRODUCTS

(CONTINUED FROM PAGE 170)

and hardness at high temperatures. Wide use of the new alloy is seen for truck engines where performance and maintenance are more important than first cost.

Company technicians say that Eatonite, while not the hardest alloy known to metallurgy, is the hardest valve facing material yet developed that will retain its shape and hard-

ness at high temperatures, and at the same time resist the corrosive effect of anti-knock compounds in new high test fuels.

Use Free Postcard For More Details.

### P142. Ignition Water-Proofer

A new liquid insulation and water-proofing product, Pib, has been developed by U. S. Chemicals, Inc., N. Y. C. Used as a water-proofing agent on ignition systems and to prevent corrosion and current leakage

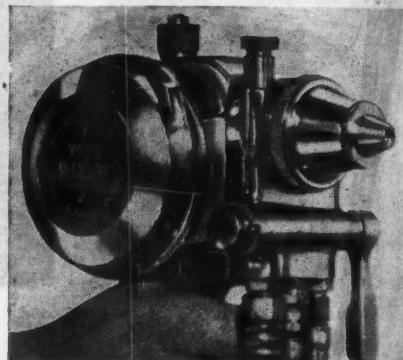
in batteries, Pib also may be used to reinsulate cracked, worn or dried-out wiring. In addition, the product acts as a rust inhibitor.

Applied with either a brush or spray to wire coils, distributors, spark plugs and the tops of battery carriers, the liquid penetrates rather than coats and is said to be highly resistant to ordinary acids, oils and greases.

Use Free Postcard For More Details.

### P143. Metallizing Spray Gun

The development of a new model metallizing spray gun has been announced by the Metallizing Co. of America, Chicago, Ill. This Model F gun is lighter in weight, more streamlined in design, better balanced and smoother in operation than previous models according to the manufacturer.



HERE

COME

THE

DALLAS POLICE

**Squad cars of the Dallas Police Department are marked with this distinctive insignia—a SUPERIOR DECAL TRANSFER.** Probably no decalcomania is asked to stand up under more trying weather conditions. Super-Cals come through because they are the all-weather Decal... made with a special protective coating. They far outlast the average paint job. Can be applied in 30 minutes. Show no brush marks. Are amazingly inexpensive. If you have a fleet of 10 or more trucks it will pay you to check Super-Cal performance, too. Our creative design department will work with you without charge.

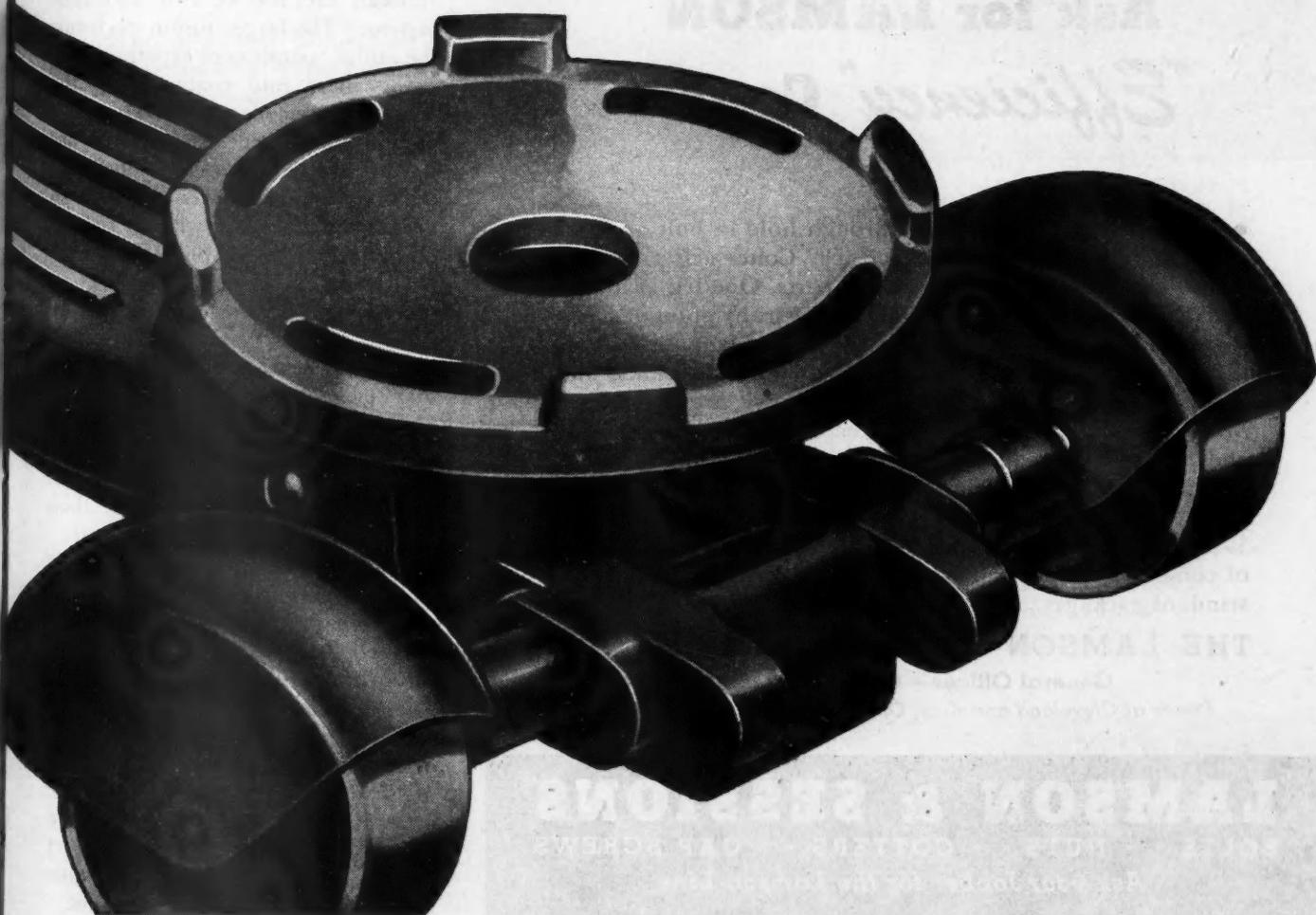
**SUPERIOR DECALS, INC.**

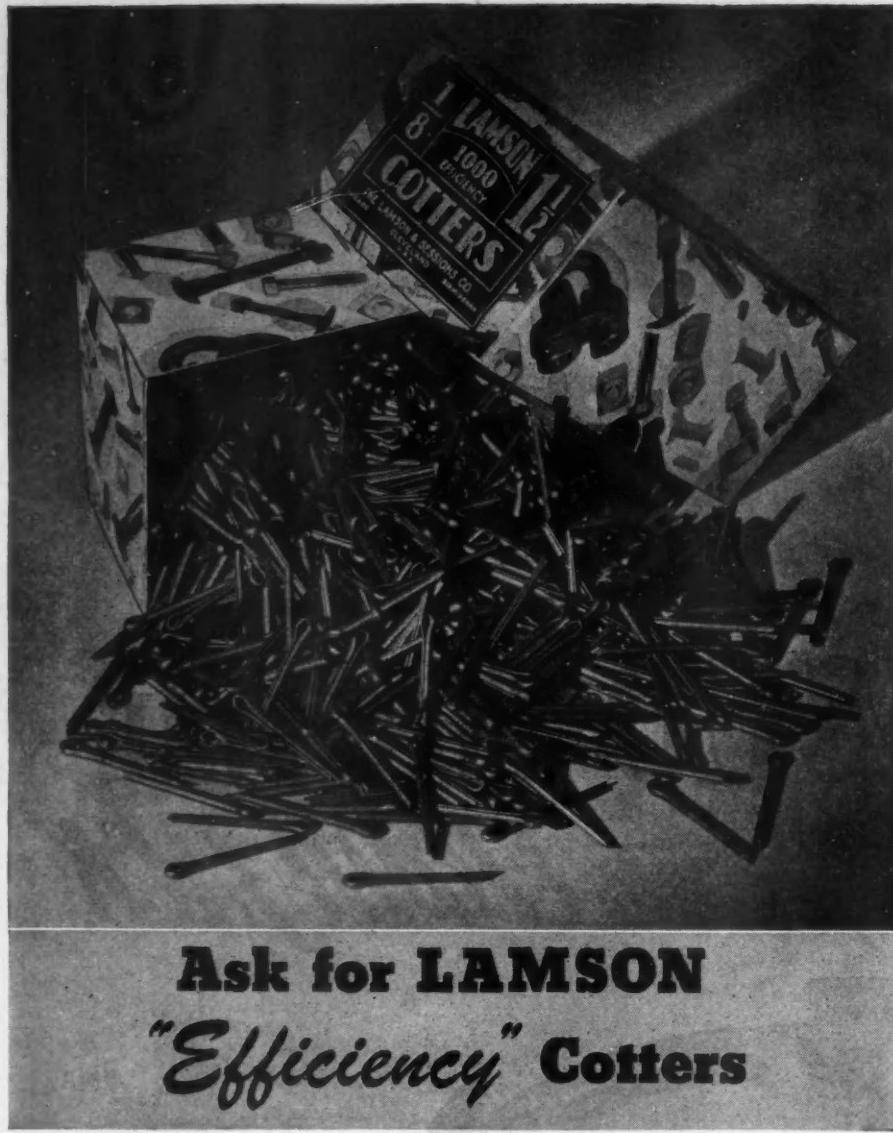
2803 Fort Worth Avenue

Dallas, Texas

*...first Peek at what's in Store for you  
when you can get your*

# AUSCO Post War Hydraulic FLOOR JACK





## Ask for LAMSON "Efficiency" Cotters

• Designed for easy insertion through hole in bolt and slot in castle nut—the Lamson "Efficiency" Cotter acts as a drift pin to correct mis-alignment in the parts. One leg is longer than the other, aiding separation of the legs by point of screw driver, blow of wrench or twist of pliers. Many millions of Lamson Cotters have gone into ships, aircraft, tanks, and trucks—and all the parts with which they are assembled. Many more millions have been keeping civilian motor cars and trucks on the road. Delivery of Lamson Cotters from stock can usually be made within two or three weeks of receipt of your order. Sizes range from 1/16th-inch diameter up to 3/4-inch diameter—for Lamson really makes a complete line of cotters! Ask your jobber for the Lamson "25-line" or for standard packages.

### THE LAMSON & SESSIONS COMPANY

General Offices—Cleveland 2, Ohio

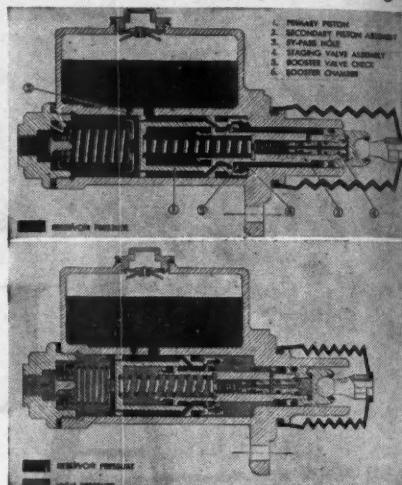
Plants at Cleveland and Kent, Ohio; Chicago and Birmingham

**LAMSON & SESSIONS**  
BOLTS . . NUTS . . COTTERS . . CAP SCREWS  
Ask your Jobber for the Lamson Line

### Compound Master Cylinder Eliminates Booster Brakes

The New York Air Brake Co. will announce shortly its new hydraulic master cylinder for use on light and medium-duty trucks and buses.

Unlike existing forms of power brakes, this product utilizes neither vacuum nor air for its actuation. It is a manually operated compound master cylinder which combines the



functions of the conventional type master cylinder and the power brake through the use of two hydraulic pistons. The larger piston performs the initial operation of expanding the brake shoes into contact with the drums. A smaller piston becomes operative at a predetermined hydraulic pressure developing sufficiently high hydraulic pressures to stop even heavily loaded trucks without requiring excessive brake pedal effort on the part of the driver.

This new product is designed to replace "booster" brakes. It occupies no more space on the chassis than that now required by the conventional master cylinder which it replaces. It requires no additional tubing. There are no holes to be drilled, and the installation time averages less than one hour.

With this new product it is possible to adjust the carburetor to maximum idling efficiency since the operation of the brake does not in any way disturb the carburetor mixture. The manufacturer states that the mileage may be increased by as much as 20 per cent due to the elimination of overbraking. Since hydraulic pressure is in constant relation to brake pedal pressure, the correct amount of power is always available to meet load or no-load conditions.

# Headed for a long, long run



In their first Main Line Diesel, the Baldwin Locomotive Works have incorporated their long and successful experience in building rugged, sturdy switchers powered by Baldwin-built Diesel engines.

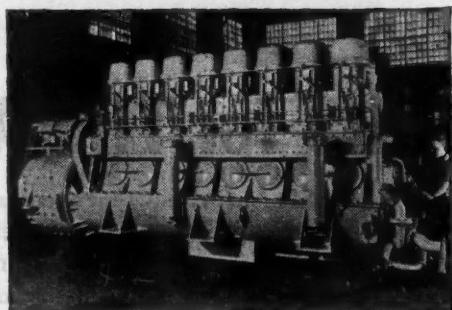
The longer life and lower maintenance costs obtained on the first liners Baldwin had processed with PORUS-KROME led them to standardize on this type of liner . . . and now every Baldwin Diesel engine coming off the production line has the greater reliability assured by PORUS-KROME. Of course, their first Main Line Diesel has PORUS-KROME applied to its liners, too, and thus it is headed for a long, long run of reliable operation.

PORUS-KROME is hard, pure chromium applied by the patented Van der Horst process. It has tiny pores and channels which serve as reservoirs for lubricating oil, feeding it back as needed. It greatly decreases the wear on bearing surfaces, and, when applied to cylinder walls, it multiplies their life 4 to 20 times . . . and the life of conventional rings 3 to 5 times.

In addition to providing a "long life" cylinder wall surface, PORUS-KROME has many diversified

applications. If you have troublesome wear problems on any parts of your machines or equipment, or are seeking a way to give your customers an added value in your products, Van der Horst engineers may be able to supply the solution for you. Write today telling us just what your problems are . . . no obligation, of course. *Van der Horst Corporation of America, Olean, N. Y.*

*Plants in Olean and in Cleveland, Ohio*



Two of these 1000 hp. Baldwin Diesel-Westinghouse generator units make up the power plant of the Baldwin Main Line Diesel. Cylinder liners are PORUS-KROME processed.

## PORUS - KROME

*Good for the Life of your Engines*

VAN DER HORST

AN AFFILIATE OF DRESDEN INDUSTRIES

## ATOMIC ENERGY

(CONTINUED FROM PAGE 35)

darkest ages of history. Centuries ago there were the Alchemists whose aim in life was the "transmutation" of matter. Gold was the most precious possession in those days—and when hasn't it been—and men worked in caves and weird laboratories striving to change base metals into gold. More recently the physicists have been probing around in

the hope of finding a new source of boundless power or whatever else could result from the smashing of the atom. Some years ago one of these researchers estimated that if a single teaspoon of plain water could be suitably disintegrated it would provide enough power to drive the largest ocean liner across the Atlantic.

### Probabilities and Improbabilities

THE power generated by the unlocking of the atom—or more properly of the nucleus of the atom—

is simply fantastic. So much so that many people can be equally fantastic in predicting the uses to which the new-found power can be put. For instance, we are almost sure to have the Sunday supplements speculate on the possibility of building fist-sized engines to drive motor cars and trucks. Or sealing a bit of matter in a container capable of supplying power for the life of the vehicle. Unquestionably, you can't rule out any of the possibilities no matter how weird. If we know how to unlock the boundless energy stored up in matter so small that you can't see it, then it is only a question of how long before it can be put to work.

Even then we are bound by the rules of engineering and the limitations of structural materials. We still don't know quite how to transmit, say, 100 horsepower of energy with a pencil. Maybe a fist-sized engine of some kind can produce 100 hp. It would do it at a tremendous speed, quite beyond the useful range of mechanical equipment. You would have to slow it down, just as we gear an airplane propeller or a marine propeller; or as we gear our present automotive engines. When you slow the engine down, you have to make it bigger.

From a practical standpoint no one can say at this moment what kind of power plant or engine can utilize "nuclear" energy. We can see that only a tiny fragment of matter will produce all of the power we need for any given job. What kind of an engine it will be, how big, and how much it will cost to harness this new energy—well, your guess is as good as mine.

We are on the threshold of untold wonders. That much is sure. But if you have listened to the radio surely you have some doubt as to how soon this awful thing can be turned to the uses of industry. In the first place, there is so much at stake that only the U. S. A. knows how to do it. Can anyone else be trusted with the secret? Only time can tell.

### Will Take Time

FROM a practical standpoint we can see that it may be a long time. Possibly not in our generation. Consider, though, that before we can use

(TURN TO PAGE 180, PLEASE).

# JUST OFF the PRESS!



## YOURS for THE ASKING--

You'll be agreeably surprised with the new Herbrand Tool Catalog No. 53 which is just off the press. It is packed with up-to-date data, and it sparkles with illustrations of time and labor saving tools bearing the time-tested mark of distinction "Herbrand" or "Van-Chrome."

Although restrictions and material shortages have made

it necessary to temporarily omit some items from the catalog, we assure you that the high quality of Herbrand Tools is being maintained. Now, as always, Herbrand Quality Tools raise the efficiency of the mechanic to the highest degree.

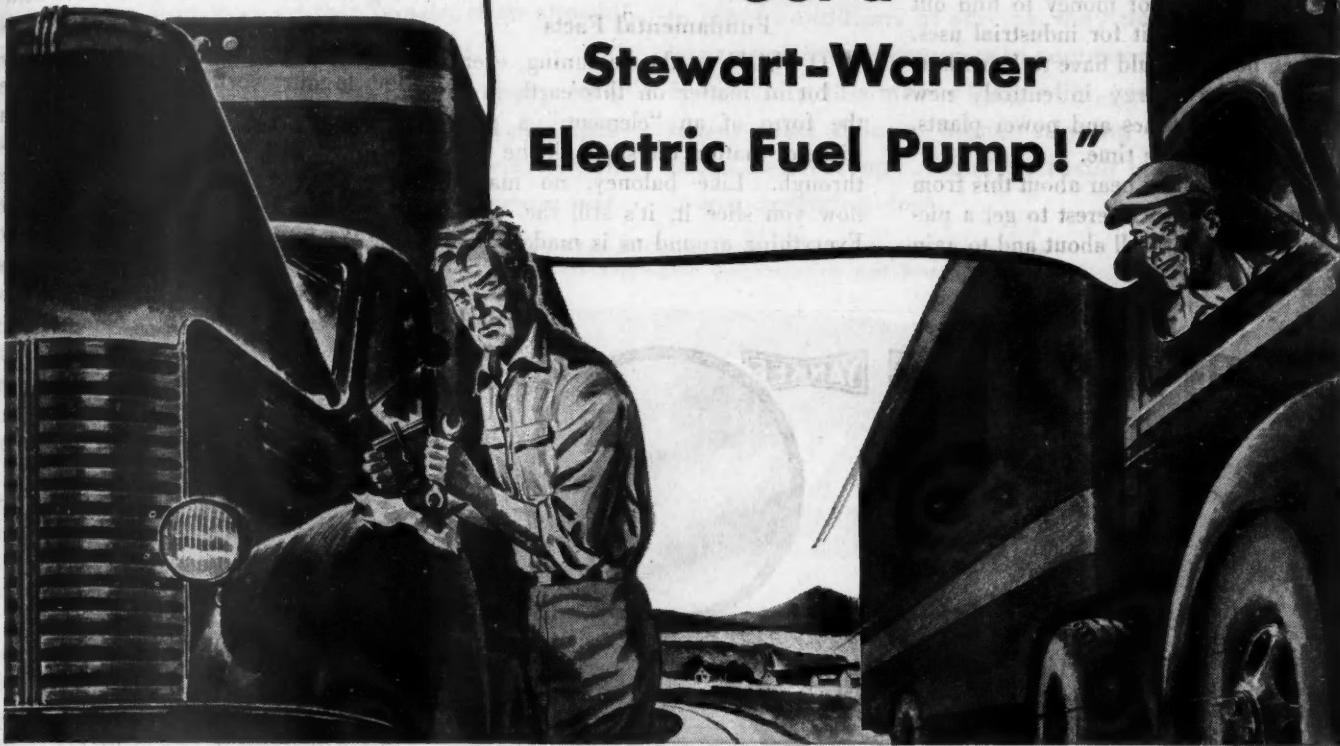
Ask your Herbrand Jobber—or write us—for Catalog No. 53 and latest prices.

THE HERBRAND CORPORATION • Fremont, Ohio

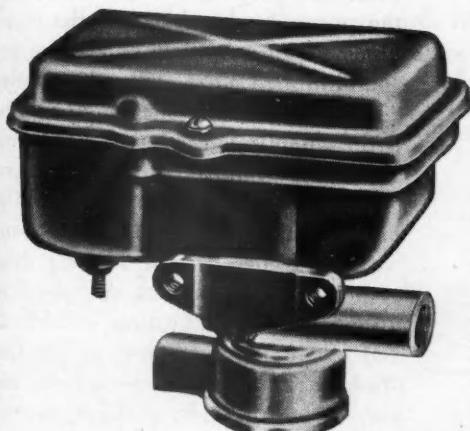
Drop-Forged Tools Since 1881

"advantages" to us. And it's to be done by our special  
agent who is armed with all the  
right "evidence" to bring you  
and your family to us.

**"Get a  
Stewart-Warner  
Electric Fuel Pump!"**



**AVAILABLE NOW! End Vapor-Lock and Fuel Pump Failure  
that Cost You Money and Time!**



**Doesn't beat itself to death. Operates only  
when needed. Delivers 15 gallons per hour  
on an average of one ampere of current.**

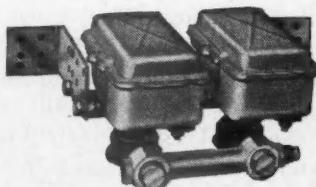
• Get yours now! This famous fuel pump pushes fuel to the carburetor under constant pressure. In so doing, it eliminates vapor-lock by pushing the vapor pocket out of the fuel line.

It's a "smooth operator"—doesn't pound or beat itself to death—lasts longer with less maintenance. And the diaphragm of tested and proved Du Pont Fairprene simply won't wear out.

There's no fire hazard. Stewart-Warner contact points are sealed in

a hydrogen filled tube and are operated and controlled magnetically. The hydrogen keeps the points cleaned automatically—greatly reduces burning, sticking and pitting. This exclusive feature is approved by Underwriters' Laboratories.

Install Stewart-Warner Fuel Pumps as replacements or as auxiliary "safety" pumps for heavy-duty operation. No rotating parts, no piston, no bearings to fail. Stewart-Warner Corporation, 1876 Diversey Parkway, Chicago 14, Illinois.



• Use Stewart-Warner Dual Electric Fuel Pumps where gas consumption is high—gas mileage lower than average. Dual pumps more than double the life of each pump. Can be installed so that each pump operates independently.

**STEWART-WARNER**  
**ELECTRIC FUEL PUMP**  
**STEWART-WARNER CORPORATION**



## ATOMIC ENERGY

(CONTINUED FROM PAGE 178)

nuclear energy we shall have to spend time and a lot of money to find out how to control it for industrial uses. Then people would have to learn how to use the energy in entirely new types of machines and power plants. That takes more time.

Since we shall hear about this from now on, it is of interest to get a picture of what it's all about and to gain

at least a layman's understanding of the terms the scientists use. For the terms and language of the atom are new and unfamiliar.

### Fundamental Facts

TO BEGIN at the beginning, every bit of matter on this earth is in the form of an "element," a pure piece of matter, the same all the way through. Like baloney, no matter how you slice it, it's still the same. Everything around us is made up of

combinations of "compounds" containing two or more of the "elements." To the chemist, such matter is composed of "molecules," that being the technical name for the combination of elements. So far as is known there are 92 "elements" present in our world. Among the pure "elements" are familiar things such as gold, silver, nickel, oxygen, hydrogen, helium, sodium, radium, etc. We can write 92 of them. They are not always pure elements in nature, but the chemist or metallurgist knows how to make the pure material. So you have the pure "element," the indivisible bit of matter that can exist by itself; and the "molecule" which is larger and more complex because it represents the union of two or more "elements."

A bit of water is composed of countless molecules; gasoline is a complex of molecules; rubber is another extremely complex kind of matter; or metal or wood.

The important thing is that in the normal processes of industry, we have countless kinds of chemical action—in the production of materials like rubber, gasoline, ink, lubes, plastics, steel; or in the generation of power as in the gasoline or diesel engine or in a steam engine or turbine. We get either the materials or the power by breaking up the combinations of "molecules" and by recombining to form still other molecules. In your own truck engine there is the complicated process of burning gasoline or fuel oil to obtain power in the form of a terrific push upon a piston. Here we have combustion, with the generation of a great deal of heat. In the process the gasoline disappears, if combustion is perfect, and out of the tail pipe you get the products of combustion—water, vapor, carbon dioxide, carbon monoxide, nitrogen, etc.

Meanwhile the combustion spews noxious gases, some going out the tail pipe, part going down to the crankcase. These include products such as sulfur dioxide, nitrous oxide, carbonic oxide, etc. If they remain in the crankcase they combine with water to form weak acids that attack the oil and bearings and parts. That's why we have crankcase ventilation on most engines. It draws out the gases before they can do much damage.

(TURN TO PAGE 184, PLEASE)

**MIRROR MAGIC? YOU KNOW HOW!**

Feats of magic always require consummate skill—painstaking attention to details—years of experience.

Making YANKEE Automotive MIRRORS requires the same magical skill—the same perfecting details—born of more than a quarter of a century of experience. It's therefore no mere accident that YANKEE MIRRORS provide high fidelity vision—without tricky illusions—with-out distortion. No wonder YANKEE MIRRORS have always been the finest in the world—the finest that money can buy!

NO. 241  
REPLACEMENT  
MIRROR HEAD.  
Made to fit  
the No. 245  
Telescopic  
Adjustable  
Mirror

NO. 245  
TELESCOPIC  
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MIRROR.  
Adjustable to  
any position.  
For Universal  
mounting on  
Trucks & Buses

You'll always find them packed in the familiar Red, Yellow and Blue package.

TRAILER AND TRUCK MIRRORS

ASK YOUR  
JOCKER SALESMAN

REFLECTORS DIRECTIONAL SIGNALS CLEARANCE LAMPS CONVERSION KITS

YANKEE METAL PRODUCTS CORP., NORWALK, CONNECTICUT, U. S. A.

THE outstanding success of rayon-cord tires in wartime service was clearly indicated by the Army's exhaustive proving ground tests. These tests also indicate that tires of this construction should help reduce commercial operating costs.

For instance, in a long distance supply test, where heat and sustained operation were principal problems, synthetic rubber tires made with rayon cord averaged 330% better. In a rough terrain test,

where bruising and cutting were principal problems, they averaged 93% better.

Although these tests do not necessarily apply to other conditions of service, they do foreshadow improved tire performance in commercial operation. Specifically, this means longer life, greater mileage, fewer road delays, higher running speeds. Add those benefits up...and the result is bound to be lower operating cost.

Source of data: Hearings before a Special Committee Investigating the National Defense Program, United States Senate—Seventy-eighth Congress, First and Second Sessions.

# Less with Rayon Cord

"RAYON CORD BETTER IN BOTH SYNTHETIC AND PREWAR NATURAL RUBBER TIRES."—Pyramid Motor Freight Corp.

CHARLES ROSENTHAL, Vice President of this large over-the-road carrier, reports: "Prewar, we obtained about 40% more mileage with natural rubber tires containing rayon cord. With current synthetic rubber tires, performance is also considerably improved with rayon cord. Mileage is about 30% greater...blowout performance is decidedly better. Maintenance problems and road delays for servicing are also reduced."



MORE SAFETY

SAFETY ZONE

Less friction heat, higher tensile strength and greater uniformity of rayon tire cords mean more safety at high running speeds.

LESS OPERATING COST



Rayon-cord tires give longer life, greater mileage...reduce impact failures, road delays, tire renewals.

AMERICAN VISCOSÉ CORPORATION

America's Largest Producer of Rayon Tire Cord, Yarn, and Fibers  
Manufacturing Plants: Brooklyn, New York; Providence, R. I.; Charlotte, N. C.; Indianapolis, Indiana; Milwaukee, Wisconsin; New Orleans, Louisiana; Portland, Oregon; Seattle, Washington; W. Va.; Atlantic City, N. J.

## ATOMIC ENERGY

(CONTINUED FROM PAGE 180)

Some chemical processes need heat to keep them active; others need freezing or cooling to remove the heat generated by the process of building big molecules out of little ones. But in all such cases either we break up molecules or build new ones. Never is the "element" broken or changed. It is the same no matter where it winds up.

### Atomic Structure

THE smallest particle that makes up an "element" is called an "atom." It is so small that it would be fantastic to write down its size numerically. Suffice it to know it's too small to see with any instrument. Yet the forces that bind an atom together are enormous—all out of proportion to the size of the atom.

Scientists have known for many years how to picture an atom. All atoms are made of the same stuff, the

same building material. That's a secret of nature itself. The only difference between one kind of atom of an element and another—the difference between gold and oxygen or hydrogen and uranium—lies entirely in the number and arrangement of the building blocks.

What is this stuff? Well, as the scientists picture it, an atom is built around a "nucleus," the core of the bit of matter, just as a golf ball is built up around a live rubber core. The nucleus contains one or more "protons" which are the heavy, massive parts of the atom and always carry a positive charge of electricity. For each "proton" in the nucleus there is an "electron." This has a negative charge of electricity just balancing the positive charge on the proton. That provides the balance of stability of the system. The electron weighs only about one-two-thousandth of the weight of the proton, thus contributes practically nothing to the weight of the atom. It whirls around the proton at a dizzy speed in a manner akin to the movement of the planets in our universe around the sun.

### Uranium

NATURE is not simple in its works. If we start with hydrogen—the lightest matter known to man—it has an "atomic" number of one. It has only one proton and only one electron. The term atomic number specifies the number of protons and an equal number of balancing electrons. But the actual atomic weight of the substance is not in the same proportion. For instance, the element Uranium—the one used in the atomic bomb—has an atomic weight of 238 whereas its atomic number is 92. To have an atomic number of 92, uranium has 92 protons packed into the nucleus and bands of electrons, 92 in number, to balance the positive charges in the protons.

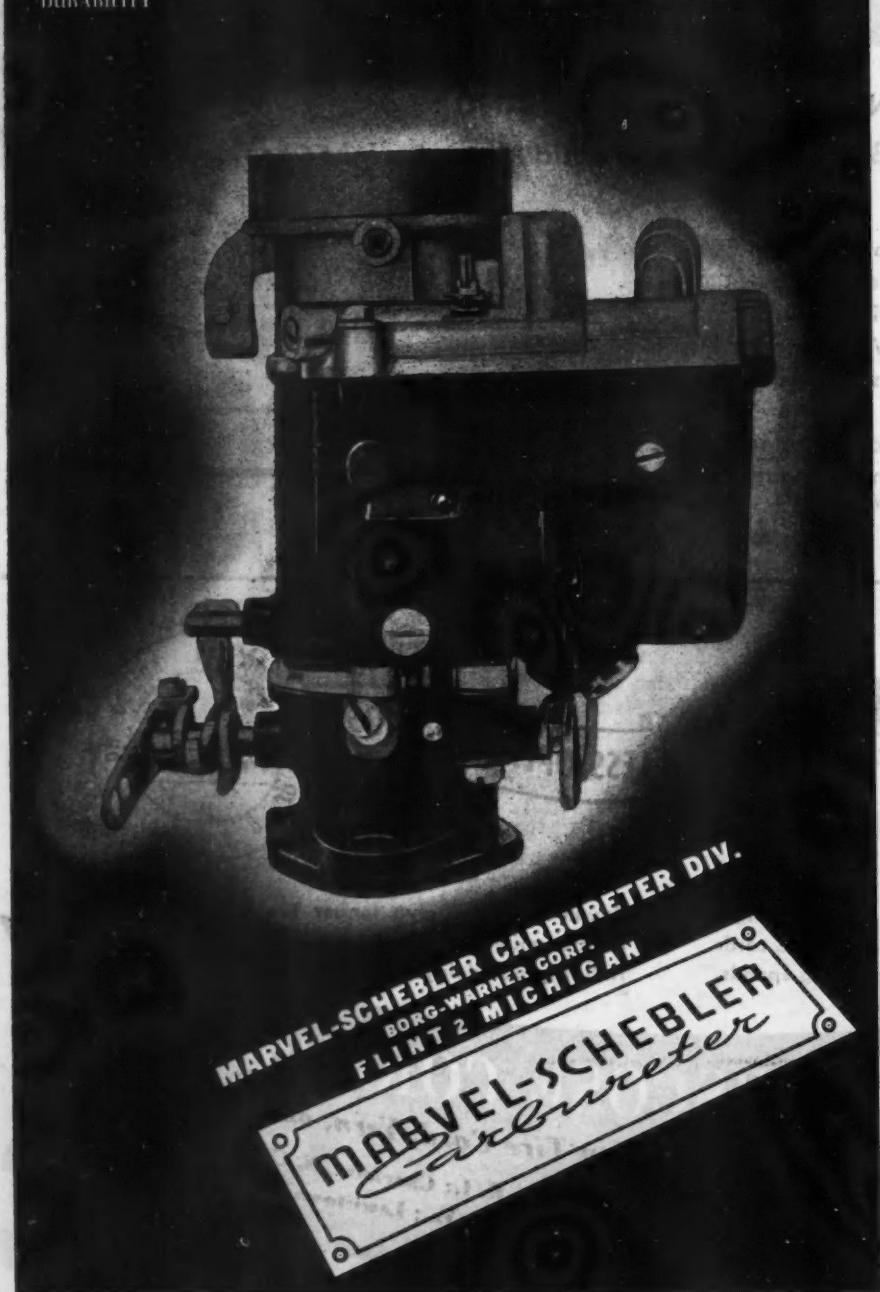
Where does the weight of 238 come from? That's accounted for by the existence of the "neutron." The "neutron" has the same weight as the proton—it's heavy and massive—but it has no electric charge on its surface. It's absolutely neutral electrically, hence the name neutron. It can stay within a nucleus and add weight but does not affect the electrons and

(TURN TO PAGE 186, PLEASE)

UNIVERSAL ADAPTABILITY  
AUTOMATIC ECONOMIZER  
for Maximum Economy  
RUGGED CONSTRUCTION  
DURABILITY

### Marvel-Schebler Carbureter Universal Downdraft

in Popular Sizes 1 1/4" & 1 1/2"



# With your equipment doing double duty now you need DOUBLE-DUTY OIL!

NOT just any oil. Not just lubrication. You need more. And you can get more.

Quaker State HD Oil does more—does two jobs. 1st, it *lubricates*; 2nd, it *cleans*. Furthermore, it lubricates better and longer. But that isn't all. Because it contains a remarkable special detergent, it keeps engines cleaner while it lubricates. Keeps vital working surfaces more free from clogging, trouble-making dirt, carbon, sludge, and sticky "varnish."

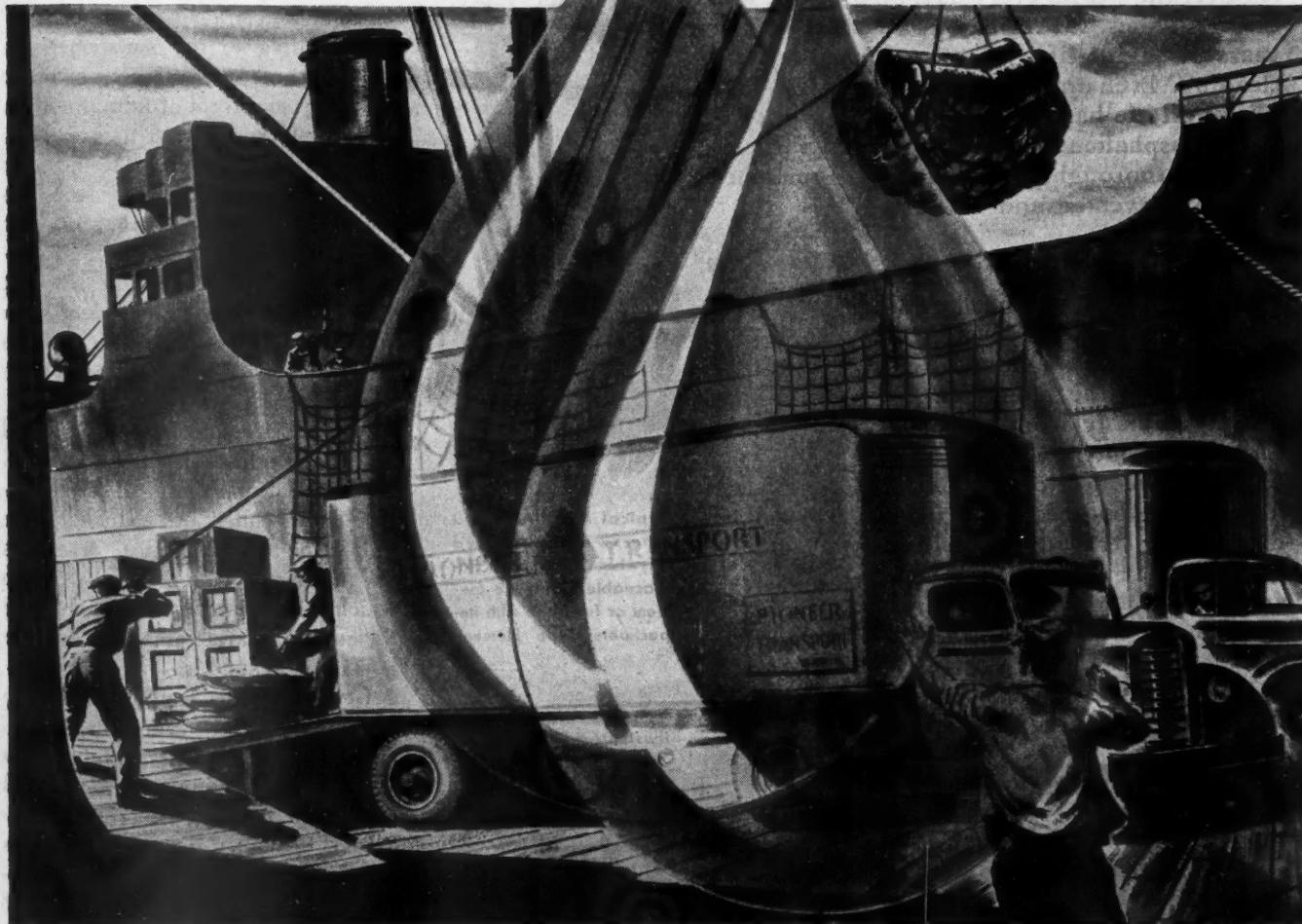
You can prove these statements—satisfy

yourself. You'll find, if you try it, that Quaker State HD Oil really can and will do all this. Why not let it help you? Try it now.

QUAKER STATE  
HD OIL

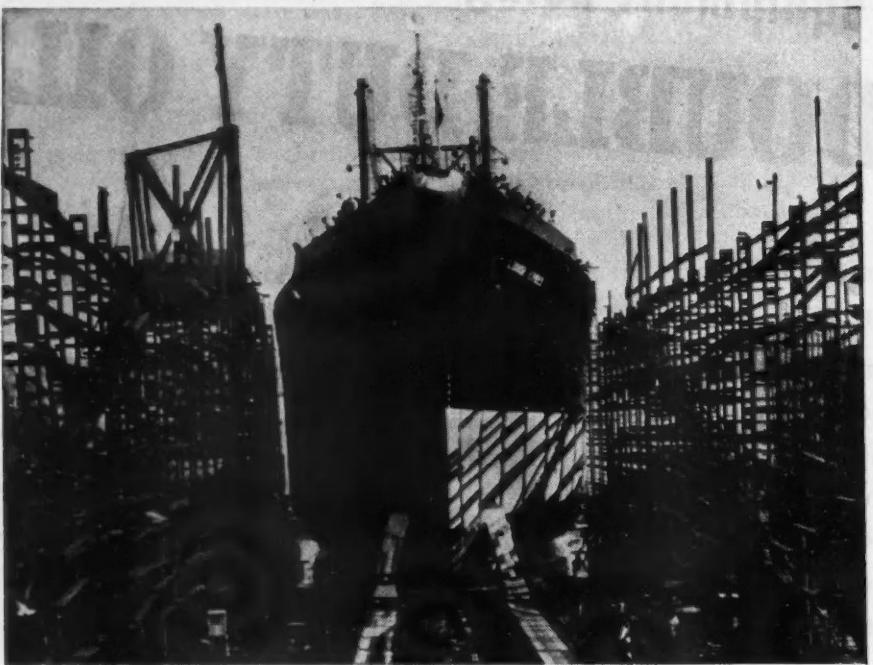
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Quaker State HD Oil for your trucks, buses and tractors  
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QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PENNSYLVANIA

# ENOUGH OIL TO LAUNCH A SHIP



(Official U. S. Navy Photograph)

## Cleaned Daily By MICHIANA OIL FILTERS

All over the world, every day, on gasoline and diesel engines, MICHIANA Filters are saving years of engine life through efficient, sure oil cleaning. Even on engines of average size, barrels of oil are handled daily—dirt and grit extracted, asphaltenes and other foreign particles removed thoroughly, consistently. Premature wear is prevented and oil costs are cut.

When MICHIANA Filters are used, dirt passes into the filtering medium and is trapped. Then the oil penetrates throughout the entire depth of the filter element, passing radially from the outer shell to the center. Cleaned oil is returned through center outlet tube to the engine. Experience has demonstrated that when MICHIANA Filters are used, time and cost of engine maintenance are reduced and engine life increased. MICHIANA PRODUCTS CORPORATION, Michigan City, Indiana.



Typical MICHIANA Oil Filters—easily serviced anywhere either with Replaceable Cartridge Element or furnished with Repackable Type Element.

Send today for new illustrated Bulletin 45-D



# MICHIANA OIL FILTERS

## ATOMIC ENERGY

(CONTINUED FROM PAGE 184)

requires no additional electrons to balance it. So in uranium you have 92 protons, 92 electrons, and 146 neutrons to give it the weight of 238.

The pull between protons is literally out of this world. So tightly are they bound together in the nucleus that there is a pull something like 10 to 50 lb. holding them together. And we are talking about bits of matter so tiny they cannot be seen. From this you can get some idea of the amount of explosive energy that is unlocked when something happens to force protons to come apart. In the laboratory it has taken something like 2 million volts to cause this to happen.

### The Atomic Bomb

ANYONE talking about the atomic bomb and guessing at how it works is in the same position as the guy who is rolling loaded dice or playing with a cold deck. There are people who know the whole story. But they are not talking. Their secret is locked in Uncle Sam's safe. All that we can do is to speculate.

According to the newspapers the atomic bomb uses uranium. But it uses a special form of uranium which exists only sparsely in nature. It is found by extraction from the basic material by a special process. This form is known as U-235, that is, it has an atomic weight of 235 as compared with the normal stuff of weight 238. The difference in weight has a tremendous effect upon its properties and behavior. The difference of three numbers means that somehow, somewhere, three neutrons were knocked out of the nucleus of uranium. This type of material exists widely in nature and is called an "isotope." Since it has the same chemical properties as the more abundant element to which it is related, it is much more difficult to separate and there is much less of it around.

Generally, the isotope is not as stable in certain respects as is the normal weight atom. Doubtless in the case of uranium, U-235 is used because it is more readily disintegrated. Another interesting thing is that uranium, the heaviest of all elements in nature, is in a family of other elements called the radioactive

(TURN TO PAGE 188, PLEASE)

# The LEADER must LEAD

Raybestos Leads in Brake Lining Advancement



Raybestos leads in product development with the largest and most complete resources and facilities in the industry. Many of the exceptional friction materials produced by Raybestos for war are now made available in the form of new and improved brake linings for light, medium and heavy duty trucks. This Raybestos product development program will continue to bring improved friction materials to you.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc., BRIDGEPORT, CONN.

**Raybestos**  
AMERICA'S BIGGEST SELLING BRAKE LINING

Brake Linings, Clutch Facings, Fan Belts, Hose — For Cars, Trucks, Buses, Tractors — On the War and Civilian Fronts

## ATOMIC ENERGY

(CONTINUED FROM PAGE 186)

group or series. That is to say, these elements give off radio activity in the form of rays or waves. The familiar radium is a member of this family.

Based upon countless experiments, scientists find that uranium takes about a thousand times a million years to give up half of its radioactivity. In progressive stages of self-

destruction or spontaneous disintegration, uranium breaks down into radium, which is more active and takes less time to destroy itself. Radium, in turn, breaks down into Polonium. When polonium finally breaks down we have nothing left but common ordinary lead in pure form. It's dense in structure and heavy and has the property, as you know, of preventing X-rays or radium emanations from going through it.

It is known that the easiest method

of smashing the nucleus is, first of all, to use an active substance like uranium, and then to bombard it with the "neutron" we mentioned earlier. The neutron is the only thing that can pass freely through the core of the nucleus because it has no electrical charge and, consequently, is not swerved from its path or captured by the electrical field within the nucleus.

We know then that the uranium bomb is touched off by neutrons moving at tremendous speeds when measured by ordinary standards but relatively slow by comparison with the speed of electrons. We know that much. But only the men who made the bomb work know where they get the neutrons and what it is that starts the neutron speeding on its way through the uranium nucleus. As the neutrons smash into the nucleus they force it apart, cause the protons to move away from each other, breaking the chain that binds them together and releasing enormous forces.

That the U. S. A. team which made the bomb possible did an amazing job can be visualized from the fact that researchers use machinery as big as a large hall with voltages starting with one million and going as high as man can make them, just to smash apart maybe a single solitary nucleus. Whereas the best scientific brains assembled by our government have created a bomb not too big for a B-29 to handle, smashing to smithereens a chunk of matter that you can see and weigh, that contains countless millions of atoms. When you smash a single atom you can measure the energy thus released but you can't do much with it. When you smash a chunk of matter you release forces so immense as to defy measurement. You can only appraise them in terms of the effect of the recent bombing.

So man has solved one of the riddles of the Universe. He has found how to tear matter apart. The only place where this has been done on a wholesale basis is on our Sun. It now remains to be seen whether this force of nature can be harnessed to man's will—not for destruction but for useful work. If and when that can be done, we shall witness a true miracle. A teaspoonful of stuff will do more work than a hill of coal or many a tank-car of high test gasoline.

END

(Please resume your reading on P. 36)

## OUT OUR WAY



Write today for proof of how SOL-SPEEDI-DRI cleans-up oil and grease, helps to cut-down on accidents and falls. Pick the slipperiest spot in your garage or shop for the test . . . the spot where oily, greasy deposits are thickest and slickest.

We have no high-pressure salesmen; we just send out a man with a bucket and a broom. He spreads a carpet of oil-absorbent SOL-SPEEDI-DRI, providing a clean, non-skid surface. When oil and grease are absorbed, he'll sweep-up the material, leaving the floor clean, dry, and safe.

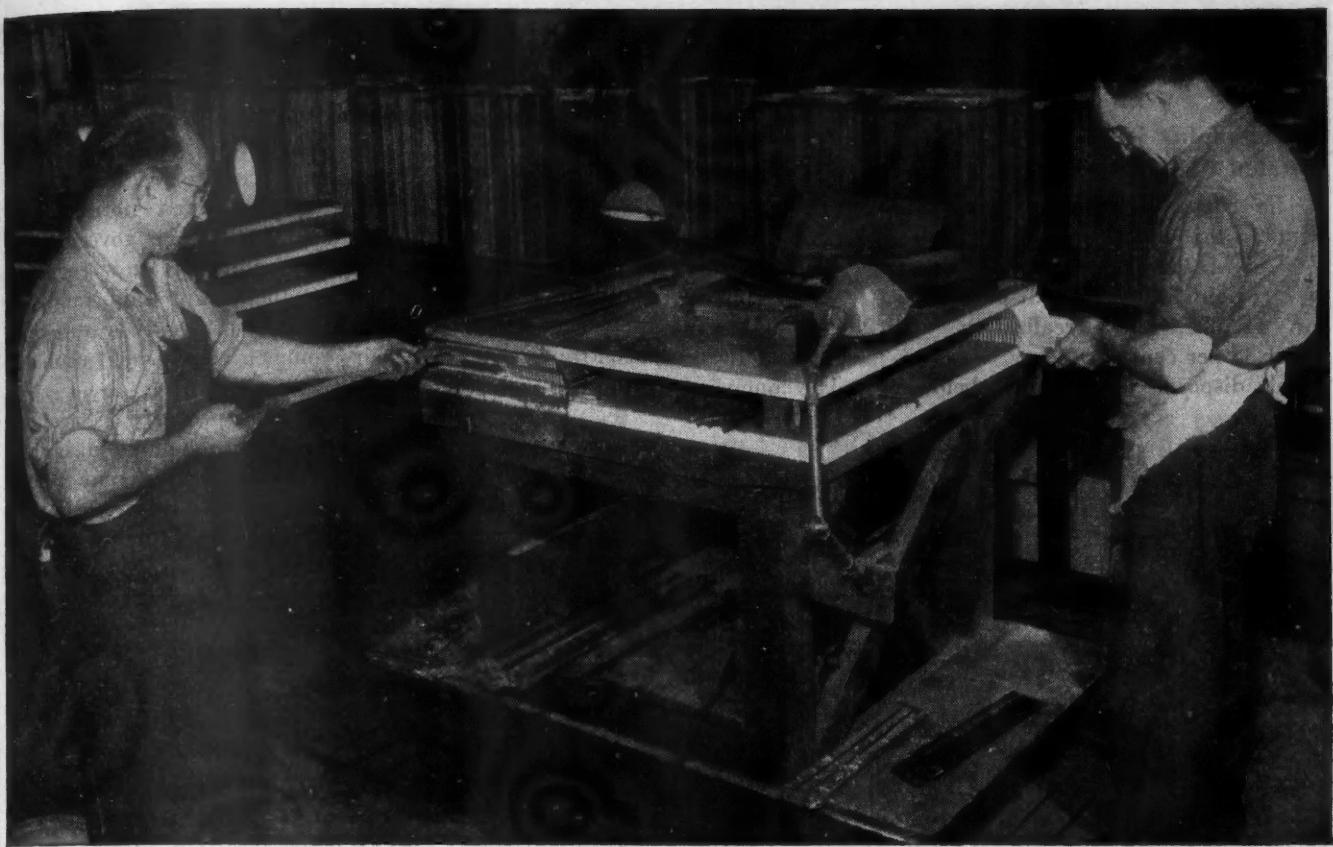
It's as easy as that. No scrubbing. No back-breaking labor. No chemicals, dangerous caustics, inflammable solvents. SOL-SPEEDI-DRI can help you eliminate slick, dangerous floor-conditions . . . easily . . . quickly.

Get SOL-SPEEDI-DRI and be "slip-happy." See why thousands of garages now use SOL-SPEEDI-DRI to end oil-slippery floors and driveways. Call your favorite jobber or attach your business-card to this advertisement and mail it to us.

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## Quality That Never Varies

No substitute has been found for exacting care and fine craftsmanship in the assembly of radiator cores. When the fins are aligned in the assembly jig, each tube must go through them without a wrinkle or a bend in its slender length.

The tubes run at precise angles through the fins—each radiator model designed and each tube angle calculated for a specific job by Long engineers—to provide maximum efficient cooling capacity in the smallest core area possible.

The combined "know-how" and experience of Long's engineers and workmen produce America's finest radiators. This reservoir of knowledge and skill designs and builds cooling equipment for cars, trucks, buses, farm machinery and other heavy equipment.

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# Surplus Property Board News

## July Surplus Disposals Totaled \$13,621,000

The Surplus Property Board announced that in the month of July a total of \$41,926,000 of surplus property (original cost) was disposed of for \$13,621,000—a realization of about 32 per cent.

July disposals fell markedly below

the peak levels established in June, SPB said. This circumstance was attributed in large part to the effect of the board's Regulation No. 2, which established a 30-day period in which Federal, State and local governments could exercise their purchase priorities under the Surplus Property Act.

The commencement of this priority

necessarily "froze" disposals for a period of 30 days, a large portion of which fell in July, and during which disposals of surplus goods available were held up pending the exercise of the governmental priorities. The effect was particularly noticeable in consumer goods. The governmental priorities periods are now regularly working, the board said, and the initial slow-up in disposals caused by their commencement has probably passed.

Total surplus property declarations have continued to mount and, in view of the end of the war, may be expected to rise at an increased rate, SPB said. During July a total of \$446,556,000 of government-owned property was declared surplus. Total surplus property inventory at the end of July was \$2,517,349,000.

## Most Restrictions Lifted On Surplus Property Sales

The War Production Board has removed the restrictions on special sales of most but not all idle, excess and surplus materials. Special sales are sales by persons who acquired or made the materials for use and not for sale or resale.

Nearly all materials in contract termination inventories and Government surplus may now be sold freely and may be used for permitted civilian production.

Buyers may not use materials acquired under Priorities Regulation 13 in violation of any of the remaining orders of WPB limiting or prohibiting the use of any particular material, or limiting the amount they may receive, or the amount of any product they may make.

## SPB to Release Trucks to Farmers Without Certificates

The Surplus Property Board has ceased allocating surplus trucks to farmers and farm cooperatives and will release, for regular disposal, trucks recently allocated to farmers and not yet sold. Farmers who wish to purchase surplus trucks should contact a local truck dealer as the vehicles will be disposed of through normal channels, with no need for certification.

The action was taken following the recommendation by the Department of Agriculture. The Department feels (TURN TO PAGE 192, PLEASE)



...it's Time for  
Higher S.Q.\*

It "ain't funny" when it happens to you! Grizzly Brake Linings guarantees higher "Safety Quotient . . . provide faster, smoother stops with astonishing freedom from adjustment. There's a Grizzly distributor near you—call him today! Grizzly Manufacturing Company, Paulding, Ohio.



"Bear in Mind" . . . Ask for

### THESE GRIZZLY FEATURES MEAN HIGHER S. Q.

- Exclusive asbestos-friction compound, molded on wire-grid back.
- Constant high coefficient of friction throughout longer life.
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- Quick stops . . . but smooth . . . and with softer pedal.
- Most efficient braking performance under all conditions of service.

# GRIZZLY

REG. U. S. PAT. OFF.

# BRAKE LINING



# POWER PROVER

## Helps Save Gasolene for This FLEET!

Glendale Farms, Inc., operates  
a fleet of 51 Divco Twins in  
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Step No. 1: George Sobeck, Garage Foreman of Glendale Farms, Inc., inserts hose of the Cities Service POWER PROVER in exhaust pipe of idling engine.



Step No. 2: POWER PROVER quickly registers 40% gasoline waste. George Sobeck adjusts carburetor to determine if this is the cause of engine inefficiency.



Step No. 3: After proper adjustments are made, the POWER PROVER shows a 15% reduction in gasoline consumption with better engine operation.

In these days of labor and gasoline shortage, the Cities Service POWER PROVER will help you save both time and fuel. It's easy to use... accurate... cuts down tune-up time... and eliminates guesswork. No fumbling around with carburetor or ignition. It quickly tells you when you hit the *real* cause of engine inefficiency.

You may benefit by having your fleet tested by the famous POWER PROVER.

Mail this coupon  
today!

This offer is limited to principal cities in Cities Service marketing territories East of the Rockies.

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Room 422, 70 Pine Street, New York 5, N. Y.

Gentlemen: I am interested in cutting gasoline waste with the Cities Service Power Prover. Please send me more information.

Name.....

Company.....

Street Address.....

City..... State.....

No. of Vehicles in Fleet.....

## SPB NEWS

(CONTINUED FROM PAGE 190)

that under present conditions distribution of surplus trucks will be facilitated by dropping the allocation procedure and that, with the most urgent need for used trucks lessened, allocations are no longer desirable.

The Surplus Property Board has issued special orders allocating nearly 5000 trucks to farm areas to offset threatened impairment of farm production due to shortages of rail transportation and automotive facilities.

According to SPB, about 4633 trucks have been allocated to date to counties in 34 states where rail and commercial trucking facilities are inadequate to move farm output.

### Col. Howse Resigns, OSP Board

Col. Alfred E. Howse has resigned as administrator of the Surplus Property Board. Col. Howse accepted the post of administrator on April 1, as a temporary position, since injuries received during his Army duties in the South Pacific made strenuous work impossible.

Lt. Col. Karl Kribben, assistant administrator of the Surplus Property Board, also resigned on Sept. 1. Lt. Col. Kribben will return to his former post as secretary-treasurer of Marshall Field Co., Chicago.

### Van Nortwick Director Dodge Truck Sales

L. F. Van Nortwick, for the past 21 years with the Dodge Division of the Chrysler Corp., was promoted to the post of director of truck sales for the Dodge Division, according to an announcement made on Aug. 29, 1945. Since 1943, he had been director of territory development.

**MOHAWK**  
**TIRES**

and Recapping Materials are both GOOD

The  
Mohawk Rubber Co., Akron 5, Ohio

**BALDOR**

**BATTERY CHARGERS**

Improved ventilation for cool operation, longer life and greater efficiency. They stand the strain of peak loads.

12-batt. size....\$28.00  
less bulb

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ALL LIQUID OR GASEOUS FUELS

# MACHINE OVER HAND FOR A FASTER, MORE UNIFORM FINISH!



Again man's ingenuity harnesses nature and her elements to "work for him" in this age of machines! Formerly only slow, tedious hand sanding was known... now it can be eliminated with the speedy, efficient Sterling 1000 Portable Electric Sander.

This high quality tool is now being used for hundreds of different sanding applications on wood, metal and composition in practically every industry. No other method will prepare a surface so well for a perfect finish! Sands faster, more uniformly, more economically. Sands (coarse or fine), laps, polishes. Vibrationless, light-weight, simple to operate.

See for yourself how the Sterling 1000 does a faster, cleaner sanding job... how it pays for itself in a short time! Ask for a demonstration from your local distributor or write: STERLING TOOL PRODUCTS COMPANY, 157 EAST OHIO STREET, CHICAGO 11, ILLINOIS.

STERLING  
1000  
PORTABLE ELECTRIC  
SANDER

## LETTERS

(CONTINUED FROM PAGE 41)



Quick-acting, AMEROID CARBURETOR CLEANER dissolves oil, carbon, wax, gum or grime from carburetors, fuel pumps, diesel injectors and small engine parts—in nothing flat. Requires no rubbing, scraping or special rinsing—single bath immersion does the job. For use—as is—to the last drop.

For over 30 years service stations and repair shops have found AMEROID safe, efficient, reliable...a real time, money and labor saver.

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Build your prestige with the complete AMEROID AUTOMOTIVE line—known to motorists everywhere.

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Chamber of Commerce Bldg., Boston 10, Mass.  
Canada: Canadian Colloids, Ltd., Montreal

Palmolive Bldg., Chicago 11, Ill.

JAMES A. CARR, Staff Sergeant,  
Luzon, P. I.

### Editorial Morale Booster

Thanks for the kind words, sergeant. We're glad to know that the job we've tried to do in the field of essential civilian transportation proved interesting to the ex-fleetmen and ex-automotive men in the Philippines. We hope the same opinion is echoed in the many other theaters of military operations in which COMMERCIAL CAR JOURNAL has circulated.

END

(Please resume your reading on P. 42)

**Gear Pullers**  
**GARAGE TOOLS**

CARBON SCRAPER  
CREEPER CASTERS  
BUSHING REMOVERS  
REAMERS

**Cal-Van**  
MACHINE PRODUCTS INC.  
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\* Write for Catalog

FOR PROMPT COMPLETE SERVICE  
ON AUTOMOTIVE PARTS...

Your NAPA Jobber  
is a Good Man to Know!

NATIONAL AUTOMOTIVE  
PARTS ASSOCIATION  
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## There's been a big change

★ Today's motor car is simply an improvement of yesterday's horseless carriage. But what an improvement!

Tapered roller bearings have been improved, too. Consider Tyson, the bearing with 30% more load-carrying rollers around the raceway. It looks like

a better bearing, and it is. Tyson's extra rollers mean greater capacity, maximum rigidity, longer life. Operators of heavy-duty equipment say Tyson generally lasts twice as long as ordinary bearings with fewer rollers. Where the going is tough, depend on Tyson "All-Rolls" Bearings.

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THE LAST WORD IN ANTI-FRICTION ENGINEERING



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Husky, reliable outfits, consisting of Driver and Puller, for all Ford-built motors since 1934. Pull "frozen" guide assemblies, no matter how tight. No. 920 Set for Ford B5, Mercury and Lincoln-Zephyr. No. 860 Set for Ford 60 only. Service manual free.

**K-D Tools are made by automobile mechanics, for automobile mechanics. Each one is designed to do a particular job . . . to do it easily . . . to do it quickly. The K-D Catalog is full of time and labor savers, the result of twenty years progressive designing and producing special hand tools for the automotive trade. There are a few (but only a few) shown here. Send for the complete catalog today and convince yourself that K-D Tools can save YOU real money on every job.**

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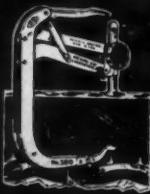
# Tools

## THAT EARN THEIR KEEP



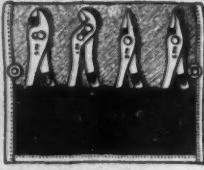
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For nearly all L-head motors. An old established favorite in thousands of shops. Adjustable, tempered jaws, parallel acting.



NO. 380 COMPRESSOR

Fast and strong, services nearly all L-head and valve-in-head motors. Two pairs tempered adjustable jaws, straight and offset. 10" x 10<sup>1/4</sup>" inside clearance.



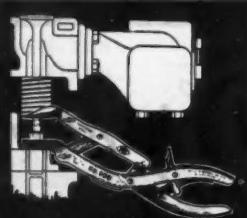
NO. 10K PLIERS KIT

Those 4 popular K-D Pliers in a NEW roll Kit to fit the pocket. Just right for all small work in hard-to-reach places. Each 4<sup>1/4</sup>" long with milled jaws and knurled handles. Tempered.



NO. 605 KEEPER INSERTER

For nearly all split keepers. Easy loading, self supporting on valve stem. Ideal for use with 600 and 380, see above.



NO. 900 LIFTER

For fast under-fender use. 8<sup>3/4</sup>" long, 3" parallel lift. Tempered jaws. Auxiliary jaws for extra high lift.

Ask Your Jobber  
for Net Prices

## RETUNE ENGINES

(CONTINUED FROM PAGE 45)

**This Job Should Be Thorough**  
**TUNE-UP** sounds like a simple job to most mechanics, but when you attempt to tune an engine to the higher octane rating gas there is plenty that must be taken into consideration. To begin with, these engines have been operating over a period of years on low grade fuels. Consequently, many conditions not generally encountered have developed which cannot be overcome by an ordinary tune-up.

With the low grade fuels and short trips, carbon deposits have been excessive with the resultant increase in compression pressures which even the higher octane fuels cannot counteract. Fuel mixture flow to the combustion chamber has been considerably restricted from carbon formation in the valve ports and under the valve heads. Shorter and less frequent runs due to gas rationing have caused excessive crankcase dilution with heavy sludge formations resulting in stuck rings, sticking valves, etched bearings, scuffed pistons and worn pins. Exhaust systems have been taking their share of the heavy burden imposed by low grade fuel through stuck manifold heat valves and clogged mufflers.

It is quite apparent that when any or all of these conditions exist in an engine, the average tune-up job, which includes only points, carburetors and plugs, will not get the best performance and economy from the higher octane fuel. The logical procedure to follow is a complete diagnosis of existing troubles before the tune-up work is done. This can best be accomplished by performing an inspection operation consisting of removing the head, oil pan and valve cover plates, then removing at least one rod and piston assembly. This inspection operation will undoubtedly reveal the necessity of other work to be able to perform a satisfactory tune-up. This work, of course, can best be done while the engine is disassembled for the inspection operation.

(TURN TO PAGE 198, PLEASE)

**OVERSIZE REAR WHEEL STUDS**  
for all  
**TRUCKS**  
Send for Catalog  
Order from your Jobber

CHAMP-ITEMS, Inc.  
6191 Maple Ave.  
St. Louis, Mo.

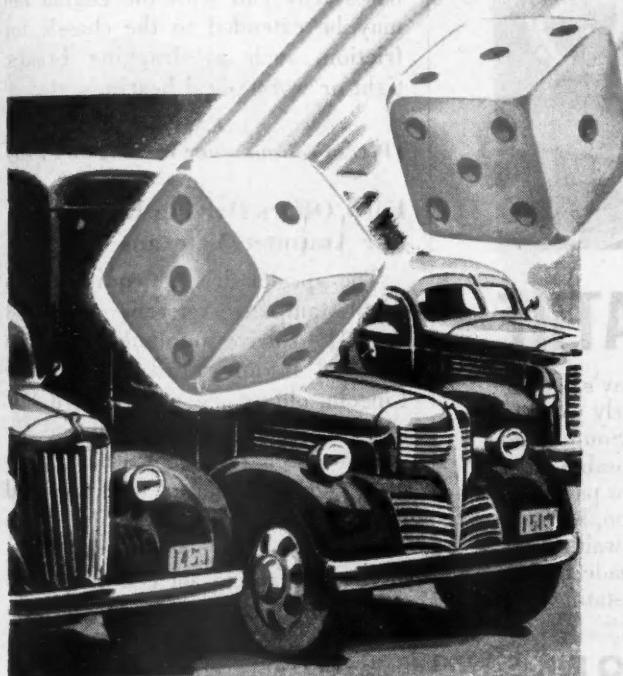
**CHAMP-ITEMS**  
RECONDITIONED  
SAFETY EXCELSIOR

GET LONGER,  
TROUBLE-FREE PERFORMANCE  
with  
**Pedrick**  
precisioneered  
**PISTON RINGS**  
in guaranteed  
**ENGINEERED SETS**  
For every Car, Truck,  
Bus and Tractor

# Don't Gamble With Your Fleet

## Play Safe With

# FRAM OIL FILTERS!



**WITHOUT** your fleet, you'd be out of business! So why gamble with it, when parts are so hard to get, mechanics so scarce? There's a Fram model to do any job. Play safe—install Fram filters and keep your fleet rolling.

#### DON'T RISK A PENNY

Yes, that's right . . . you don't gamble a cent. Because Fram either pays for itself many times over, in savings on engine wear, parts, delays and repairs . . . or the cost of your Fram filters is cheerfully refunded. So call your jobber and try Fram for 90 days. Give these big, heavy-duty filters "the works" . . . and then see from your shop records that Fram filters pay for themselves!

#### HOW FRAM CUTS WEAR

Today's neglected roads mean more dust and grit in your fleet's engines while some wartime gasoline has a higher sulphur content, thus increasing the formation of sludge and acids in motor oil. But Fram with its greater filtering area, filters out dirt, carbon and metal particles . . . while the exclusive Fram chemical treatment impedes formation of harmful acids or corrosives. Don't gamble with your fleet! If it isn't filter-equipped, install Fram filters. And if it already has filters, put in Fram replacement cartridges to step up performance. Call your jobber today!

**FRAM CORPORATION, Providence 16, R. I.**  
In Canada: J. C. Adams Co., Ltd., Toronto

**FRAM** OIL & MOTOR  
CLEANER

## RETUNE ENGINES

(CONTINUED FROM PAGE 196)

### Tune to Factory Specifications

THE actual tuning of the engine should start with factory specifications and setting, since the engine was designed to operate on these recommended specifications. Accurate testing instruments play a vital part in the final tuning of the engine. Many of these instruments allow tests to be made under actual operating conditions. Where these instruments are not available, the vehicle can be road-tested under operating conditions and any corrections or adjustments made to secure top performance. The final tuning does not necessarily end with the engine but may be extended to the chassis for friction, such as dragging brakes, tight or worn wheel bearings, etc.

END

(Please resume your reading on P. 46)

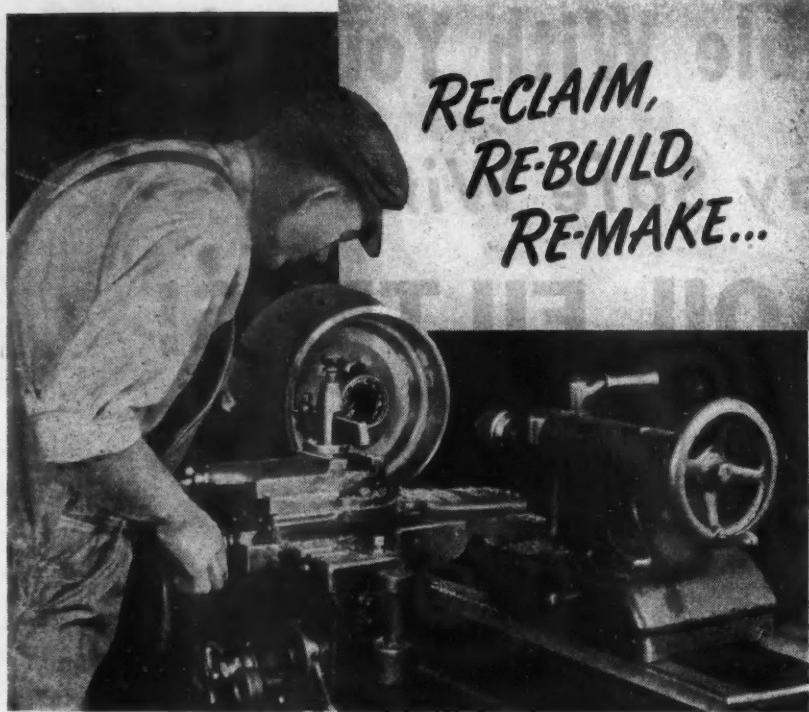
### Ford Offers Driving Kit For Amputee Veterans

The special driving equipment to enable amputee veterans of World War II to drive automobiles can be installed in any Ford, Mercury or Lincoln, old or new model, Ford Motor Co. officials have announced.

The order for the special equipment should be placed with the Ford dealer of the veteran's choice. The dealer then will advise the home office of the veteran's exact condition, and the proper kit will be provided to take care of his particular amputation. The Ford company will stand the original cost and installation charge.



Long haul usually refers to the distance traveled, but in this instance the word "long" fits the object hauled rather than the mileage covered. The big Mack operated by City Transfer and Storage Co., Long Beach, Calif., moved this 79 ft. 8 in. gasoline cracking tower weighing 41 tons from Western Pipe and Steel Co. plant in Los Angeles to the Ohio Oil Co. operations at Taft. A 32-ft. semi-trailer and a two-axle pole dolly were used in transporting the load a distance of 125 miles over the famous California Ridge Route.



**HOW TO RUN A LATHE**  
A 128-page book on lathe operation and care. Size 5 $\frac{1}{4}$ " x 8". Send 25c in stamps for copy.

## WITH A SOUTH BEND LATHE

Re-claim—Re-build—Re-make is today's service slogan. Worn or broken parts that formerly went to the scrap heap must be salvaged. Versatile South Bend Precision Lathes are now more indispensable than ever in the modern service shop. Often new parts can be made from scrap. Time can be saved, too, by making repair parts "on the spot"—instead of waiting for slow deliveries. South Bend Lathes are made in five sizes, 9" to 16" swings. Write for catalog, stating size of lathe in which you are interested.



**SOUTH BEND LATHE WORKS**  
*Lathe Builders For 38 Years*  
445 E. MADISON STREET • SOUTH BEND 22, INDIANA

## Dart Trucks

### HEAVY DUTY FOR OFF THE HIGHWAY SERVICE

— Specialty Designed for —  
Coal Mining—Iron Ore Mining—Copper  
Mining—Pit and Quarry—Logging—Oil  
Fields—Etc.  
It Costs No More for Trucks Specially  
Built to Fit Your Needs. Have Our Engi-  
neers Visit and Analyze Your Operation.

**DART TRUCK COMPANY**  
KANSAS CITY, MO.

## AIR-GO • 100% PETROLEUM PRODUCTS

### MOTOR TONIC

Reduces maintenance and oper-  
ating costs . . . results in more  
engine power, more mileage per  
gallon, less wear and repair,  
freedom from carbon formations,  
sludge, etc. Add to any motor oil.

### GAS FLUID

Aids in reducing gasoline and  
oil consumption, prevents corro-  
sion, assures cleaner top motors,  
reduces metal wear and loss,  
helps eliminate sticky valves.  
Complete details on request.

**ALLEGANY OIL CO.** 216 NO. CLINTON ST.  
CHICAGO 6, ILL.

## STEPPING FROM AUTO TO TRUCK OR BUS

# DOESN'T INCREASE A MAN'S STRENGTH OR STATURE

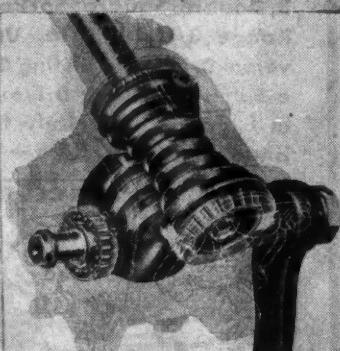
Since Gemmer pioneered ease of steering, the vast majority of passenger cars have it. A truck or bus driver gets used to it in his own car.

But when this driver steps into the cab of a truck or bus having ordinary steering, he has to be ready to exert greatly increased effort on the steering wheel.

He cannot be expected to grow in the act of changing from his car to truck or bus. Gemmer Steering MAKES CERTAIN HE DOES NOT HAVE TO—the vehicle so equipped has passenger car ease of steering. It is quite natural that Gemmer equipped vehicles are preferred by drivers. Fleet owners and operators prefer vehicles so equipped because decreased driver fatigue makes for quicker trips, fewer accidents.

Gemmer Steering Gears are simple, efficient, sturdy. An hour glass worm mounted on roller bearings bears on gear teeth that roll. Roller tooth and roller bearings banish friction, minimize wear. There is no lost motion; rarely, if ever, need for maintenance. Steering is always firm, responsive, positive, with absence of rubbery feeling or wander.

GEMMER...The Symbol  
of Steering Excellence



**STEERING WON'T PUT EXTRA DEMAND ON THE DRIVER IF IT IS GEMMER STEERING**

**GEMMER MANUFACTURING CO., 6400 MT. ELLIOTT, DETROIT 11, MICH.**

# MIGHT SMALL TOOL SET

**A Little Giant  
For Business!**  
*Saves carrying a lot  
of tools . . . .*

4 Single Hex, 4 Double Hex,  
3 Double Square Sockets.  
Range 3/16 to 7/16. Universal Drive with Sliding Bar  
a Spintite Straight Drive all  
in a pocket size nicely finished metal box. Ask for . . .

**WALDEN WORCESTER**

Set 3100A  
and 3100



See it at  
Your Jobber  
Two  
Combinations

**WALDEN**  
WORCESTER  
WRENCHES

**STEVENS WALDEN, INC.**  
468 SHREWSBURY STREET  
WORCESTER, MASSACHUSETTS

Send for  
Catalog 141  
picturing a full  
line of Automot-  
ive, Aircraft and  
Radio wrenches—  
tools and boxes.

## SERVICE MANUAL GRIPES

(CONTINUED FROM PAGE 52)

considered the personal property of the boss or chief mechanic. If a large mixed fleet, the manuals are spread around like so much rubbish until torn and mutilated to such an extent as to be valueless. To be of any value the manual must be flexible and available to everyone in the shop.

Here are a few suggestions:

(a) Manuals should be printed on glazed paperboard and perforated to fit a standard ring or extendable pin binder, for the following reasons:

1. It can be cleaned of grease and dirt.

2. It is easier to handle, as the pages do not stick together.

3. It is more durable.

(b) Each sheet should contain data, tolerances and diagrams for one component unit only, such as water pump, carburetor or transmission.

(c) Pictures should be used only where exploded views are not sufficient. Photographs are not as desirable because proper relationship of spacers, gear, pins, etc., cannot be clearly shown, as possible with exploded views.

(d) Explanations and assembly instructions should be given in clear understandable language, printed in type large enough to read at normal working distance. Important steps (ones that advance the work only) should be printed in black. Key points (thing that will make or break the job, injure the worker, or make the job easier to do) should be either in bold type or red print).

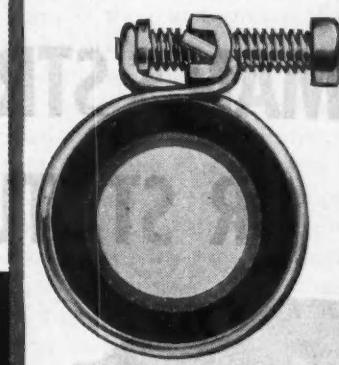
As an example: Install rear main shaft bearing, SHIELD TOWARDS INSIDE OF TRANSMISSION. This would be in red because assembly in any other manner would be incorrect and thus considered a Key Point. This is accepted procedure in many large industrial plants when training new employees. In regard to this don't forget every mechanic is a "new" man when he is overhauling a unit for his first time.

(e) No part numbers should be shown, they only tend to confuse the mechanic. When material changes, modification or additions made to it would involve substituting part num-

(TURN TO PAGE 202, PLEASE)

New!

## A POWERFUL CLAMP with 360° of UNIFORM CLAMPING POWER



## CENTRAL "360" WIRE HOSE CLAMP

Unlike other preformed clamps, the Central "360" provides unlimited clamping power . . . and remains a constant perfect circle with equal pressure over the entire 360° circumference of the hose . . . regardless of the amount of tightening pressure applied.

### DEPENDABLE

Clamping power, even on synthetic hose, is unaffected by rough castings or variations in hose diameter and resistance. The "360" tightens instantly. Its powerful pressure grip cannot be loosened by the most severe vibration.

### EFFICIENT

No other preformed clamp equals the "360" for power, efficiency or speed of application. It is America's newest, most efficient wire hose clamp —ideal for fleet servicing. The "360" is guaranteed unconditionally . . . Costs no more than ordinary clamps!

*Send Today for Free  
SAMPLE & BULLETIN No. 106*

**CENTRAL EQUIPMENT CO.**  
900 SO. WABASH AVE., CHICAGO 6, ILL.

KEEP BUYING WAR BONDS

# THE CASE OF THE CRACKED SEALED BEAM LENS

The other night a guy drove into my service station with a cracked lens on his Sealed Beam headlamp. Told me he wanted a new Sealed Beam unit, and asked me if there was any difference between the various makes.

So I told him, "Plenty of difference, friend—and you can be glad



there is! This Guide unit, like the ones you have on your car, doesn't fail when the 'air seal' is broken.

That's why both your lights kept burning after your lens was cracked."

"Wow!" says my customer. "You don't know how lucky I was. I



drove thirty miles over these winding roads without passing a service station that was open. If I'd had to do it with one headlamp out . . ."



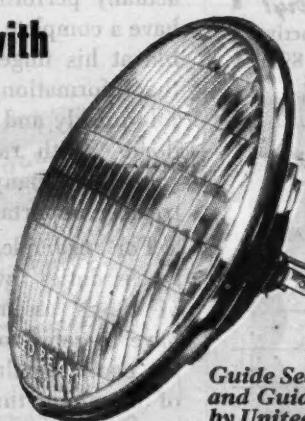
Well, I replaced his damaged unit with a new Guide Sealed Beam unit, and sent him on his way with the safest lighting money can buy. Safest . . . because Guide Sealed Beam units give double protection: no dim-out for the life of the unit—no black-out if the lens is cracked.

**Let Safety Share the Ride—Replace with**

**GUIDE**  
**SEALED BEAM**  
**HEADLAMP UNITS**

**NO DIM-OUT**—They're right . . . they're bright . . . they won't grow dim throughout their long life. Guide Sealed Beam units are sealed against dust, dirt and traffic film to give your customers a "carpet of safety" at night.

**NO BLACK-OUT**—Even if a stone or road mishap cracks the lens, the Guide Sealed Beam unit keeps burning until the damaged unit can be replaced. It does not fail when the "air seal" is broken . . . safeguards your customers "all the way."



**Guide**  
**LAMP**  
DIVISION OF THE  
GENERAL MOTORS  
ANDERSON, INDIANA



**GUIDE LAMP**  
**A UNITED MOTORS LINE**

Guide Sealed Beam replacement units and Guide lamp service parts are sold by United Motors Service distributors.



### Easy to SNAP ON the hose

Simply turn the screw to back the end of the spring steel band out of the housing, then snap the band over the hose, press the end back into the housing and engage the screw to tighten. It's quick, simple, positive, and there are no loose parts to fumble with or drop.

**FREE SAMPLE** for you to try!  
This is only one of the many distinctive AERO-SEAL features. Learn how good these new clamps are by trying one yourself! Use the coupon below and send for your free sample clamp today!

AIRCRAFT STANDARD PARTS CO.  
1773 19th AVE., ROCKFORD, ILL.  
 Please send me one sample "AERO-SEAL"  
 Hose Clamp. Size preferred \_\_\_\_\_  
 NAME \_\_\_\_\_  
 COMPANY \_\_\_\_\_  
 ADDRESS \_\_\_\_\_  
 CITY \_\_\_\_\_ STATE \_\_\_\_\_

### SERVICE MANUAL GRISES

(CONTINUED FROM PAGE 200)

bers in each book. Remember this is glazed paper and difficult to write on. Names of parts, where shown, should be the same as the nomenclature used in parts catalog.

(f) A clear understandable index should be provided, arranged so the mechanic doesn't have to search for the instruments or hanger bearing for half an hour. Refrain from the usual advertising suggesting the use of "Genuine Parts" and similar trite expressions. The owner or mechanic is interested primarily in getting the job done, and will secure the parts where available.

The service manual would then closely resemble those used by the radio profession. Additions, deletions and changes could readily be made.

When used by an all-around general mechanic in a small fleet shop, the manual would be placed intact alongside and bound with loose-leaf manuals pertaining to other makes and models of trucks in the fleet.

When used by a large organization, that operates sufficient trucks to make specialization profitable, the manual can be broken down by section and distributed to each department. In this manner the brake department would have all the data concerning brakes. The same would be true of the engine shop. In these cases the loose-leaf pages would then be bound together, making a complete file on the unit or units repaired by this department.

The boss or service manager could still have his copy to hold down a shelf and gather dust, but the man actually performing the work would have a complete, accurate and concise file at his finger tips containing all the information he needs to do the job quickly and the way it should be done. With rapidly changing personnel in many shops this is extremely important.

For example, a new mechanic whose duties involved the rebuilding of clutch assemblies would merely have to refer to the proper page in his complete clutch manual, instead of thumbing through scores of odd (TURN TO PAGE 205, PLEASE)

## BAKER SNOW PLOWS

### MAINTAIN TRUCK SCHEDULES WHEN THE DRIFTS ARE DEEP!

Prompt deliveries after heavy snowfalls are noticed and remembered by industry, as well as the consuming public. Bus patrons likewise appreciate minimum delays. It pays to be prepared—with Baker Snow Plows. Thousands are in use by truck fleet and bus operators. They are properly designed and ruggedly constructed for long time, abusive service.

### All Types for All Trucks

**V-TYPE TRUCK PLOWS**—Four models for trucks from 1½ tons upward. Moldboards are curved to convey snow upward and off the top outer edge onto the shoulder of the road.



Wear-resistant adjustable runners support plow on inside so that weight of snow does not bear on truck, which only guides and pushes.

**REVERSIBLE TRIPPING BLADE TRUCK PLOWS**—Eight models. Clear paths 6½ to 9 feet.

All models are equipped with the Baker tripping blade; made in sections which deflect on striking a fixed object, and react instantly when object is passed. All plows mounted on easily installed lift and push frames.



**ONE-WAY LANDSLIDE PLOWS**—Clear paths 7½ to 9 ft. Seven models; four with sectional tripping blades; three with rigid blades.

Hand hydraulic depth adjustment. Moldboard shaped to discharge snow onto shoulder well clear of roadway. Deflector extensions are available.



Write for Catalog 829 and attractively illustrated bulletin, "Snow—Friend or the Enemy". How soon you can procure a Baker Snow Plow can not now be predicted; but it will pay you to get the facts now.



**BAKER MFG. CO.**  
571 Stanford Ave., Springfield, Ill.

**BAKER** TRUCK &  
TRACTOR  
SNOW PLOWS

## SERVICE MANUAL GRIPES

(CONTINUED FROM PAGE 202)

miscellaneous pamphlets only to find the information he needs is missing.

All this might be discounted by a few old timers whose contempt for the "book" mechanic has no end but this same mechanic will tell you he learned the hard way, which no doubt was making plenty of mistakes then correcting them at his own or someone else's expense. However, the writer believes the old saying "It's fun to be fooled but better to know" will provide a foundation for a man to become a better mechanic.

The manufacturers of trucks and service tool equipment can and should contribute to the utmost by standardizing their service manuals as suggested.

WILLIAM A. ROBIN, Captain,  
9th Marine Aircraft Wing,  
U.S.M.C.A.S.,  
Cherry Point, N. C.

END

(Please resume your reading on P. 53)

### World Bestos Corp. Buys Swan Brake Lining Division

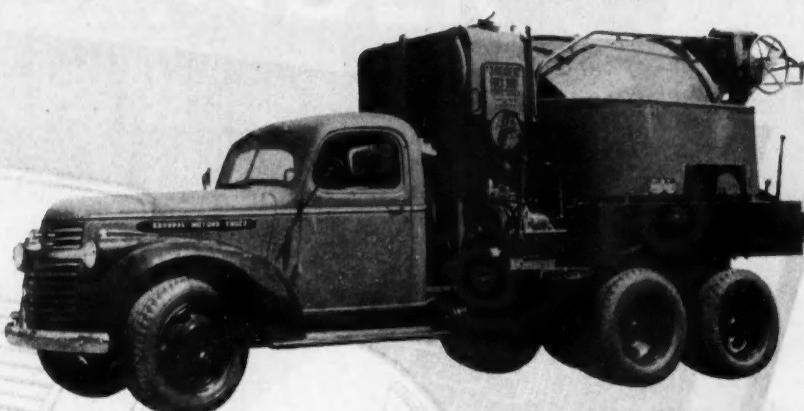
World Bestos Corp. of Paterson, N. J., has purchased the brake lining division of The Swan Rubber Co., Carey, Ohio, according to Donald H. Spicer, World Bestos president.

Purchase included raw materials and equipment for the manufacture of several constructions of brake linings and clutch facings. Equipment and inventory have been moved to the New World Bestos plant in New Castle, Ind.

### Army's "Giant" Used as Wrecker

What is believed to be the largest auto ambulance in the country has been acquired by Arthur E. Heinss, owner of the Cincinnati Towing Service. The tank transporter was purchased from the Army at a surplus property sales. Powered with a 200 hp. Hercules engine, the truck is classified as an 8-wheel driver. The monster is 35 ft. long, 8½ ft. high and has a capacity of 20 tons. It will be converted to a wrecker for hauling other road giants out of ditches and other types of salvage work, according to the owner.

## DUAL DRIVE POWER FOR CONCRETE MIXERS



The Fabco Dual Drive with power selector, applied to standard, production model, medium duty trucks, is just tailored to the needs of transporting "ready mix".

On the highway, the truck rolls along on power applied to the forward driving axle only, the second driving axle is disengaged and "free wheels".

At the job, where additional traction is necessary, the driver employs dual drive, and underdrive reverse, if necessary, and dumps the load directly into the forms.

If you are in the construction business, you'll be interested in writing for a copy of our new FABCO DUAL DRIVE bulletin.

**Fabco** 26 Years in this Business  
**F. A. B. MANUFACTURING CO.**  
1249 SIXTY-SEVENTH STREET • OAKLAND 8, CALIFORNIA  
Dual Drives - 6 and 10 Wheel Units - Logging and Highway Trailers - Frame Extensions

WITH THE TOOLS  
THAT BUILT THEM

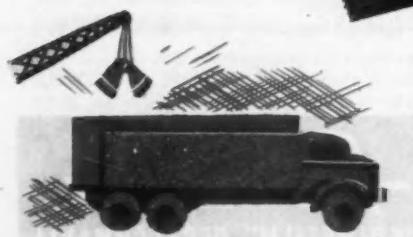
**PORTABLE ELECTRIC**  
and  
**PNEUMATIC TOOLS**  
\*Drills \*Sanders \*Grinders \*Polishers  
INDEPENDENT PNEUMATIC TOOL CO.  
600 W. Jackson Blvd., Chicago, Ill.

**Permalux**  
"KOLORFILM" DECALCOMANIA  
FIRST IN { APPEARANCE  
ECONOMY DURABILITY  
Still Made With DuPont "DULUX"  
Write Today for details  
THE PERMALUX COMPANY  
900-10 West Lake Street, Chicago, Ill.

# How UP-TO-DATE are you

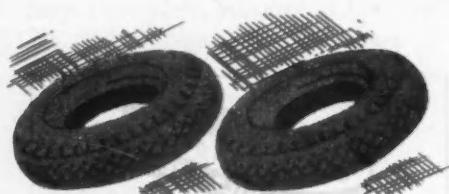


## CHECK THESE ADVANTAGES



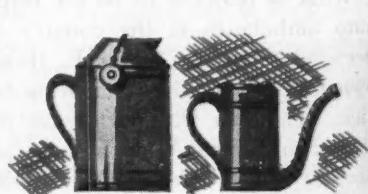
### Lower Gas and Oil Consumption!

Take your choice!  
Carry more goods.  
Or carry same and  
cut gas and oil con-  
sumption. Either way, thanks to alu-  
minum's strength-weight factor, *you win!*



### LONGER TIRE LIFE

Light-weight, high-  
strength aluminum  
construction reduces  
burden of unloaded  
truck on tires. Furthermore, skidding is  
lessened due to lower center of gravity.



### MORE PAYLOAD

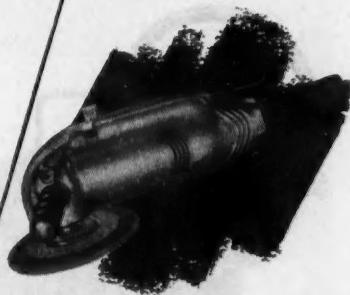
It's as simple as this! Take  
two containers, same ca-  
pacity . . . one heavy, un-  
wieldy . . . the other light,  
strong. Fill both to same weight level. The  
lighter, obviously, will contain more payload.

There's a **FASTER WORKING**  
**SKILSANDER**  
 for **FASTER SANDING** in Every Shop

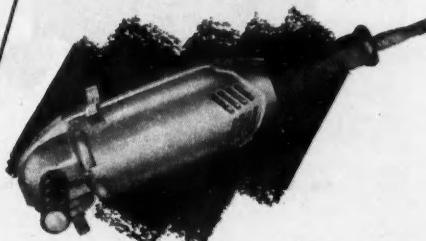


**1 FOR DEALER SHOPS...SKILSANDER**

Model "N"...for every  
sanding job in body  
repair and finishing. **\$53**



**2 FOR SPECIALTY SHOPS...SKILSANDER**  
Model "G"...a heavy duty 7-inch sander  
ideal for sanding and grinding work on  
trucks, busses and major body repair jobs.



**3 FOR TOUGHEST JOBS...SKILSANDER**  
Model "SL"...extra-heavy duty sander  
that can handle the widest variety of  
surfacing jobs, grinding with 6-inch cup  
wheels, and sanding with 9-inch discs.

While SKILSANDERS are made in various capacities, they're all built alike when it comes to quality...with the best materials and craftsmanship available. With heavy-duty ball bearings throughout...smooth running, extra capacity motors...accurately machined, heat treated, quiet-running gears...over-size cartridge type self adjusting brushes...balanced ventilating fans...dust-proof brush and commutator compartments...die cast aluminum alloy bodies for extra strength and minimum weight.

And once you operate a SKILSANDER, you'll be impressed with its power, compactness and easy handling. Call your jobber today for a demonstration, and be sure to ask for SKILSANDER by brand name!

**SKILSAW, INC.**

5033-43 Elston Ave., Chicago 30, Ill.

Factory Branches in All Principal Cities

# PORTABLE ELECTRIC **SKILTools**

MADE BY SKILSAW, INC.



**SKILSAWS**



**SKILSANDERS**



**SKILShear**



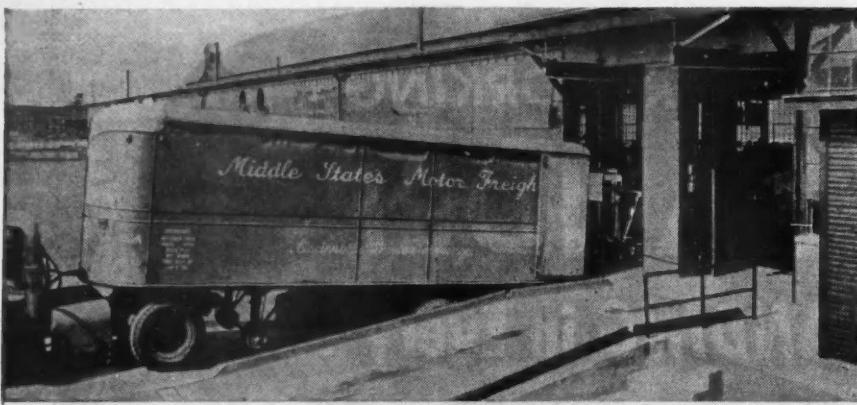
**SKILNIBBLER**



**SKILDRILLS**



**SKILGRINDERS**



Here is a ramp that may be moved up and down by means of an electric-hydraulic piston. Each ramp is hinged at the outer end to a roller which permits it to move forward or backward slightly as its other end is raised or lowered. A

push button station raises or lowers the free end of the ramp to any height desired within the 66-in. range of operation. The design and construction of the adjustable ramp is a postwar product of the Joyce-Cridland Co., Dayton, Ohio



No. T 000 Q M C

Capacity 2½ Gals.



BRAKE PARTS  
BRAKE FLUID  
BRAKE TOOLS

BUILT to the same high standards for which all EIS Products are famous. Heavy steel construction; accurate, durable gauge; substantial fittings; safety air valve; automatic shut-off.

Bleeds up to 12 cars in one filling; flushes up to 8 cars in one filling. No wrenches needed to hook up except Chryslers. Three simple combination adaptors take care of practically all cars. Handy for filling hard-to-get-at Master Cylinders.

Order from your Jobber

EIS MANUFACTURING COMPANY  
MIDDLETON, CONN.

## THE GRIPE DEPARTMENT

(CONTINUED FROM PAGE 51)

to replace them. This is too frequent a job, due to their location. The least oil leak or seepage around the crankshaft oil seal saturates them, deteriorates the rubber, and they need to be replaced. This can happen without the knowledge of the operator. It can be said, "Replace the oil seal." But that won't cure the damage done to the support.

I suggest for the postwar cars a metal support extended up each side of the motor at the front—thereby putting the support up in easy, accessible place. Next, the rear or side supports (if you would do them justice by calling them supports). I suggest moving these side supports and cross members back to the rear of clutch housing, and install supports front and rear with bolts and nuts instead of the type installed with cup screws—thereby doing away with the necessity of a transmission support.

But, if the manufacturers are determined to stick to the transmission support, may I suggest that it be moved from under the transmission to each side, to eliminate deterioration due to grease.

E. E. PENNY, Service Manager,  
City of Birmingham Garage,  
Birmingham, Ala.

END

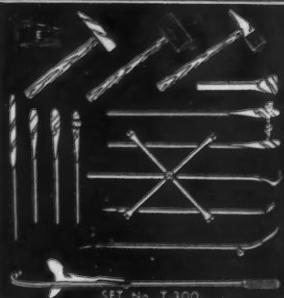
(Please resume your reading on P. 52)

James A. Edwards, former president of the Jesco Lubricant Co., Kansas City, has been appointed sales manager of the grease department of the Macmillan Petroleum Corp.



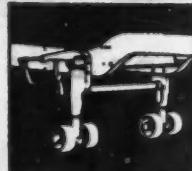
### KEN TIRE TOOLS

REG. U. S. PAT. OFF.



LEAD THE FIELD  
ADVANCED DESIGN  
QUALITY UNPARSED  
SEE YOUR LOCAL  
JOBBER OR  
WRITE FOR  
LITERATURE  
KEN TOOL  
MFG. CO.  
AKRON 5, OHIO  
SET NO. T-300

### AUSTIN



THE ACCEPTED STANDARD . . .

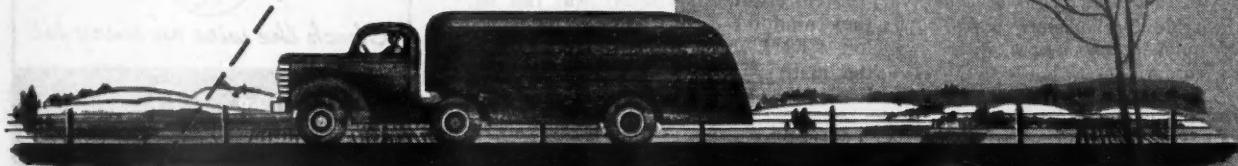
A complete line of LANDING GEARS . . . HORIZONTAL, VERTICAL and FOLDING TYPES

Write for complete information on "SAFETY PROPS" and FIFTH WHEELS

**AUSTIN**  
TRAILER EQUIPMENT COMPANY  
MUSKEGON, MICHIGAN



"Neglected carburetors  
can siphon off profits  
in Three Ways!"



**1. GAS WASTE**—Leakage and low mileage can result from improper adjustment, wear on internal parts, clogging, and corrosion.

**2. TIME OUT OF ACTION**—Time-out for service is not profit-time. Expert service, done quickly and thoroughly, puts trucks back on the road at peak operating efficiency.

**3. ROAD FAILURE**—Faulty carburetion cuts down road speed, causes breakdowns. Consistent, expert service takes care of inexpensive repairs and adjustments that prevent costly delays.

The three enemies of fleet operation outlined above are real threats to your profits. But there is a simple and sure-fire way to defeat them. Zenith Authorized Service is daily proving to fleet operators that regular, specialized carburetor service pays off in dollars and cents!

Specially trained mechanics, with the correct tools and equipment, as well as adequate repair parts, perform cleaning, adjusting and repair operations *at regular intervals*.

Minor repairs are taken care of before they become costly repairs requiring lengthy layups. And failures in operation are practically eliminated—keeping your schedules right "on the nose".

Every carburetor is checked against the 9 Vital Points shown on the right. Check them over yourself, and you will see why Zenith Authorized Service pays off in profits!



LOOK FOR THIS SIGN

for prompt, thorough  
carburetor service

EVERY ZENITH CHECK-UP INCLUDES THESE 9 VITAL POINTS  
OF CARBURETOR MAINTENANCE.

1. Thorough cleaning of bodies and parts without injuring the corrosion-resistant dichromate finish on die castings.
2. Careful inspection of channels and passages to insure proper fuel flow.
3. Cleaning of small parts with special solvents which will not destroy calibrations of metering orifices.
4. Inspection of castings for warpage or distortion of surfaces. Precision resurfacing of faces when necessary.
5. Proper inspection of throttle shaft and bearing. Elimination of excessive air leaks.
6. Careful cleaning of idling system and properly inserting throttle plate in relation to idling port.
7. Inspection of vacuum system, accelerating pump, etc.
8. Inspection and proper servicing of float systems.
9. Complete checking after repairs, adjustments, and reassembly.



Listen to "MEN OF VISION"  
every week over CBS.

**ZENITH**  
CARBURETOR DIVISION OF  
696 Hart Avenue, Detroit 14, Michigan



# Available Trucks

for operating convenience—safe and comfortable driving. You'll profit by investigating the superior features of the NEW "AVAILABLE" Models from 2½ tons upward.

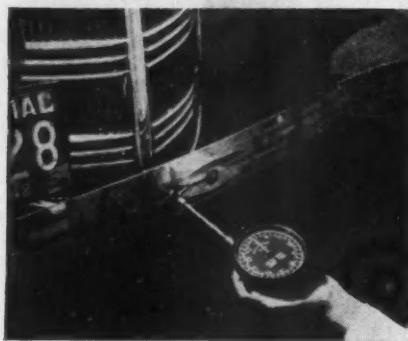
**AVAILABLE TRUCK COMPANY**

2501 ELSTON AVENUE—CHICAGO 47, ILL.  
FINE MOTOR TRUCKS SINCE 1910

ENGINEERED TO FIT YOUR BUSINESS



Model 400—3½-7 ton C.O.E. Available panel body truck designed and built for inter-city hauling for Wells Forwarding Co.



## KNOW YOUR RPM

Jones Portable Tachometers make possible quicker check-ups with greater accuracy.

For checking engine speeds from crankshaft, generators, or other exposed rotating parts; trouble shooting without necessity of road tests. A wide variety of ranges—light weight and heavy duty; guaranteed calibration. Complete in carrying case with all accessories—\$35.00 FOB Factory. Long Extension Arms available at slight additional cost for speed checks thru radiator grille.

Users include Seaboard Freight Lines, Standard Oil Co. of La., N. Y., N. J., U. S. Army Air Forces, U. S. Navy, Socony Vacuum Oil Co., General Motors Truck and Coach, American Fire Apparatus, Autocar Co., Atlantic Refining Co., International Harvester Trucks, Mack Trucks.

### JONES MOTROLA

438 Fairfield Ave. Stamford, Conn.

## MEEHANITE

The Ideal Metal for BRAKE DRUMS

RESISTS HEAT, SCORING  
GIVES SMOOTHER  
BRAKING ACTION  
REDUCES LINING-WEAR

Developed in cooperation  
with General Foundry &  
Mfg. Co. of Flint, Mich.

### HEARD BY THE GREASEMAN

(CONTINUED FROM PAGE 53)

In the morning Pete the Helper didn't know what a pop valve was, but he did by evening after he had replaced three of them.

"What's a pop valve," said the driver of the third tractor, when he heard the Boss tell Pete to replace it. "That dirty little thing that sits on the air tank," came back Pete, black with grease.

• • •

"I'm clean at last," Pete said that evening after several dips into the soap can. "And I feel funny, too," he added.

"Red (Hell on Wheels) was just in," they announced to the Boss, "and he left a work sheet a mile long." "What's the matter," said the Boss, "did somebody pass him last night?"

• • •

"Put this tube in the exhaust pipe" the technical man with the exhaust gas tester told Dizzy the Helper, who wears rubbers the year around. "Give her an enema, eh?" cracked Dizzy.

• • •

"Let's take in the Carnival tonight," said some one in the Driver's Room. "Take it over, you mean," said Hermann the night watchman.

• • •

"There's only one thing wrong with my tractor," said Lippy, the snappy little Driver with the corny jokes, but proud of his "horse." "It won't go itself. It has to have a nut behind the wheel. Ha, Ha."

Bullhead, the driver with the voice, who can shout down all the noises in the shop when he tells what is wrong with his "horse," got all stuffed up on this report:

"Can't get stick out of high range at times. Front end is getting loose. Check brakes and stuff, throws to left like Hell. Check points, no power, pings, stinks and stuff."

• • •

They gave Bullhead a new tractor and asked him how he liked it, after his first trip. "Swell," he said. "Now, instead of going down hill screaming and tearing my hair, last night I went down singing."

(TURN TO PAGE 300, PLEASE)

## ARMSTRONG

Specialists in Quality  
Tires Since 1912

### TIRES



Check the wire on every job

## Wiry Joe

AUTOMOTIVE CABLE  
manufactured by  
THE CRESCENT COMPANY, Inc.  
Pawtucket, Rhode Island



## Is it Air YOU WANT?

—then write for  
**FREE  
COMPRESSOR  
BOOKLET**  
on  
"More Profitable Service"  
...also ask for FREE Curtis Maintenance Check Chart.



CURTIS PNEUMATIC MACHINERY DIVISION  
of Curtis Manufacturing Company  
1970 Kienlen Avenue • St. Louis 20, Missouri

## A TIP FROM THE OIL FIELDS



● Every truck, bus and car driver knows that nothing makes driving more tiring and hazardous than a grimy, dust-covered windshield. The dust particles, reflecting the rays of the sun, or—at night—the beams from oncoming headlights, produce a dazzling, blinding glare.

In the oil fields, where "windshield trouble" is unusually severe due to the oily, dust-laden atmosphere, the TRICO Automatic

Windshield Washer has solved the problem for scores of drivers. Right while driving, the touch of a button squirts two 16-second jets of clean water, or a special TRICO solvent solution, on the windshield; the wiper blades do the rest.

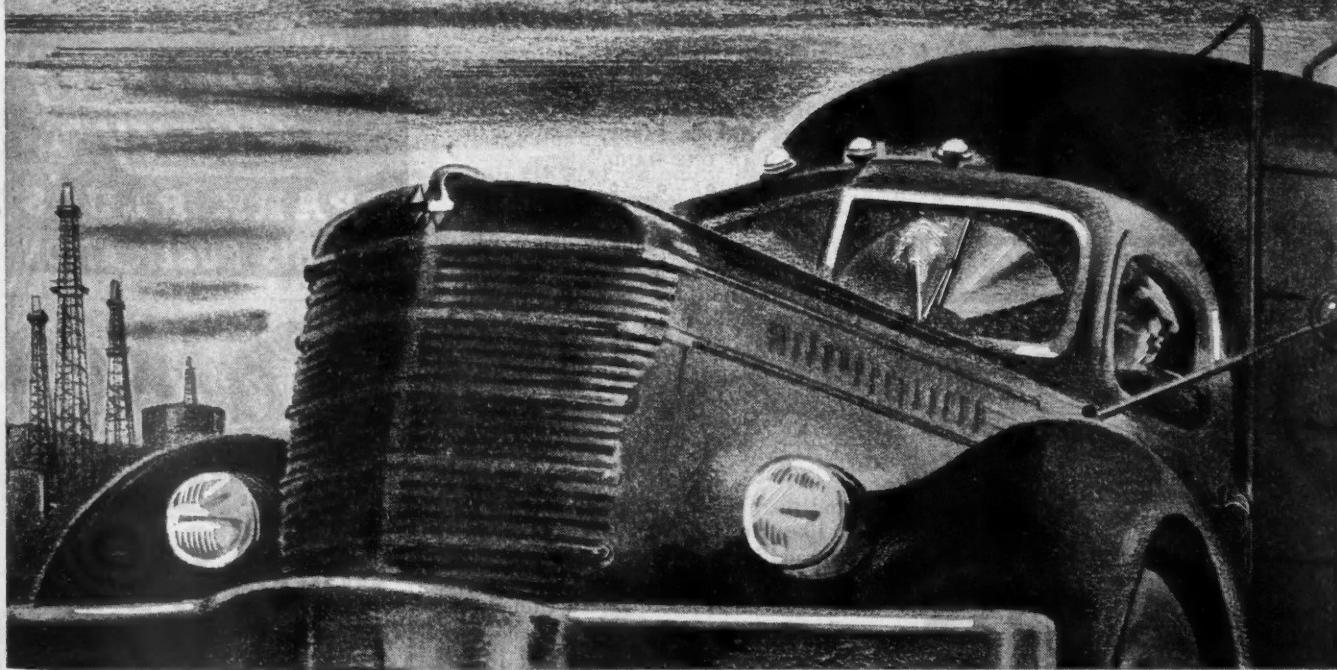
In foggy, misty weather, in sprays of light rain, the TRICO Washer is equally effective in quickly clearing the windshield for better vision, safer driving.

Operates by vacuum. Easily installed.



### WINDSHIELD WASHER

Manufacturers of vacuum-operated products, including automatic wipers used as standard equipment on millions of cars for 25 years, and of precision gauges (Micro-Chek) for 3800 war industries. Trico Products Corporation, Buffalo 3, N. Y.



## WHY WE RECOMMEND

THESE four steps insure built-in quality in TUTHILL Springs:

1. Material control based on analysis.
2. Heat treatment, pyrometer controlled.
3. Shot-blasting with latest equipment.
4. Inspection and test for uniformity.

We make both standard and special springs.  
Specify your requirements.

**TUTHILL SPRING CO.**

**TUTHILL**

**SPRINGS**



760 W. POLK ST.  
CHICAGO 7

**VELVAC**  
**POWER SINCE**  
**BRAKES 1930**

**Better Built  
for Better Service**

REPRESENTED  
THROUGHOUT U. S. AND CANADA

VELVAC, INC. - DETROIT 16, MICH.

**SOAX**

AUTOMOTIVE and AVIATION  
CHEMICALS

E. A. GERLACH CO.  
PHILA. 40, PA., U. S. A.

*Oh Yes, VALLEY CHARGERS Will Be Back*



But—for the duration our facilities are entirely absorbed by war production. How soon we can again supply them depends on V-J day, but they will be back soon, we hope. In the meantime, remember VALLEY CHARGERS, for they will be available again.



VALLEY ELECTRIC CORP.  
4221 Forest Park Blvd., St. Louis 8, Mo.

### Longer Life for Trucks

The popularity of "Rings made by Simplex" is increasing daily—the name SIMPLEX is growing bigger and bigger. Fortunate indeed, will be the service shop after the war, who has built his reconditioning business around Simplex Rings. They provide longer life, and as never before, longer life is what a truck needs today.



**SIMPLEX**  
PISTON RINGS

SIMPLEX PRODUCTS CORP., Cleveland, Ohio

### HEARD BY THE GREASEMAN

(CONTINUED FROM PAGE 298)

"I dropped off Lookout Hill in whistling gear," chortled Red (Hell on Wheels) "and they said I went through the town so fast they couldn't see between the tractor and the body."

"Well, I like to drop off the little ones," said Old Dutch the veteran, "but no big ones for me. I once saw a fellow two miles in a corn field after dropping off a big one."

Lippy of the corny jokes listened to the mechanics arguing about an engine head that carried an odd sized nut, one claiming it was on an International K-9, the other claiming there was no such a model. "I'm sure there is," piped up Lippy, "for I've got two of them home. Canine. Catch. Ha Ha."

"Still on an ice cream diet?" the driver asked Joe of the Hangovers. "Yes," said Joe sadly, "ice cream and Bull Durham. I can't even get cigarettes."

The Boss heard a driver invite Joe out for a test run on his tractor, it pulled to the right. "Not with Joe," said the Boss. "You'd never get by Mike's Tavern, that's on the right."

"I JUST SPENT \$15 FOR TOOLS," SAID PETE THE HELPER SADLY, "AND I CARRIED THEM IN ONE HAND."

"What do you wear on Sundays," they shouted at the snappy driver who walked in wearing a trench coat, light yellow tie, and pressed gray trousers.

Eddie the wolf picked up an old name plate and fixed it up with his name on it for his tool box. In the space for Model he inserted the word FEMALE.

And there's Feets the fat little driver who likes the ladies and spends his spare time waddling around the Terminal after the buxom Rosie. "He's like a pointer," said some one. "More like a sniffer to me," said the Old Timer.

(TURN TO PAGE 302, PLEASE)

### Replace Round Type Marker Lamps

**Bowman**  
BRIGHT BEAM  
Shatterproof  
PLASTIC LENSES

Try this experiment on your present lens—then try it on ours and you will then understand what we mean by shatterproof. Made in two colors, red and amber (that will not fade), they are weatherproof and have glass-like transparency. In sizes 2 1/2 to 3 1/2. Contact your jobber or write us direct.

BOWMAN AUTOMOTIVE PLASTICS CO.  
4316 W. 192nd Street, Cleveland 16, Ohio



**Wohlert**  
CORPORATION LANSING MICHIGAN

SEE NEXT MONTH'S  
SPECIAL AD ON THE NEW  
Controlled Heat Zone

**BLUE CROWN**  
**HUSKY**  
SPARK PLUGS  
IN THIS PUBLICATION

**Gatke**  
CUSTOM-BILT  
BRAKE LININGS  
**STOP'EM SAFELY**  
GATKE CORPORATION  
228 N. La Salle St., Chicago 1, Ill.

*Tops in -*

**DURABILITY,  
ADAPTABILITY  
to the job — and  
CONVENIENCE  
on the job.**

For all makes and models of trucks

THE PERFECTION STEEL BODY CO.  
Galion, Ohio

Write for literature  
and names of nearest  
Distributors



**PERFECTION**  
TRUCK BODIES AND HOISTS

"**THERE'S AN EXTINGUISHER  
EVEN I CAN USE!**"

*Employees* are your real fire-fighters . . . and the fire extinguisher is their most effective weapon.

Randolph "4", lightweight and easy to use, is ideal for the amateur. Just ONE HAND snaps this unit from its bracket . . . one trigger-touch sends powerful carbon dioxide deep into the blaze—kills stubborn fires in split-seconds!

A dry, odorless gas, carbon dioxide cannot stain or damage the most delicate equipment. There's no liquid or mess to clean up . . . no shut-down or delay after the fire is extinguished! Approved by Underwriters' Laboratories.



**Randolph** SIMPLIFIES FIRE-FIGHTING

**FREE!** Send me your new booklet "Sharpshooting At Flames". Illustrates how to fight fires and protect property with fast-action carbon dioxide gas.

Name \_\_\_\_\_  
Address \_\_\_\_\_

**RANDOLPH LABORATORIES** INC.

8 EAST KINZIE STREET  
CHICAGO 11, ILL., U.S.A.



## EVERY GOOD TRACTOR OR TRUCK DESERVES A *Snyder* SAFETY TANK

- + ADD SAFETY, CAPACITY, DURABILITY
- SUBTRACT FIRE HAZARD, OPERATING COST
- = ANSWER THE SNYDER SADDLE AND CYLINDER SAFETY TANKS, THE LAST WORD IN TRUCK AND TRACTOR FUEL TANK CONSTRUCTION

SNYDER MANUFACTURING CO., P. O. BOX 14, BUFFALO, N. Y.  
SNYDER TANK CORPORATION, P. O. BOX 2390, BIRMINGHAM, ALABAMA



### USE WHIZ **MOTOR RYTHM**

to desludge engines  
the modern chemical way!



**MOTOR RYTHM**  
A PRODUCT OF Hollingshead  
LEADER IN MAINTENANCE CHEMICALS

### UNITS AVAILABLE

## GRICO 2-AXLE DRIVE

19842 W. Eight Mile Rd.  
Detroit 19, Michigan

### ANY MOTOR TRANSPORT HEATING PROBLEMS?

Consult our Engineers

HUNTER AND COMPANY  
1560 East 17th Street,  
CLEVELAND 14, OHIO

### BETTER BODIES

\* Build truck bodies of SUPERIOR GALVANNEALED. It's a highly rust-resistant, zinc-coated steel sheet that "takes" and "holds" fine finishes.



THE SUPERIOR SHEET STEEL CO.  
CANTON, OHIO

### HEARD BY THE GREASEMAN

(CONTINUED FROM PAGE 300)

Foreman to Driver: "What terminal does this wreck belong to?"

Driver: "No one. It's a gypsy."

Foreman: "Well, tell them to put it in the shop and put a new tractor under that steering wheel."

• • •

And there's Old Dutch, the veteran driver who likes to fish and drink beer. His load was waiting one rainy night three blocks from the terminal. So he ordered a taxi. Reason: He said he didn't want to get his pants wet and sit on them for his nine-hour run.

• • •

Unofficial bulletins on trailers:

To the imposing list of big city terminals on a big interstate trailer some loyal driver added in chalk,

### "YORKVILLE"

The little Irish Driver with the glib tongue was sent out the other night with a wobbly Body that probably went through World War I. When it came back the side had soaped on it,

### "TRUCK FOR HIRE"

And another trailer rolled in today with the back lettered in the dust,

### "QUIET, PLEASE. DRIVER ASLEEP."

And the thoughtful city Driver who on VE Day soaped one side of his trailer with,

### "DON'T FORGET JAPAN"

a message to many who quit work that day.

On the other side, he added,

### "WE HAUL DEAD JAPS FREE"

• • •

Tireman removing scraps of rubber and dust that was once an inner tube, from a tire that really "blew": "Well, they come out easier that way."

• • •

Sarcastic mechanic about a new helper: "Why he wired up under a dash the other day so that when the driver turned on his headlights the horn blew."

### END

(Please resume your reading on P. 54)

### HEAVY DUTY MOTOR TRUCKS AND

### GASOLINE ELECTRIC GENERATING SETS

### DUPLEX TRUCK COMPANY

Lansing, Michigan

## FRINK SNO-PLOWS

REC. U.S. PAT. OFF.  
Both "V" TYPE and  
**ONE WAY BLADE TYPE**  
hand or power hydraulic control  
FOR ALL MOTOR TRUCKS  
FROM 1½ TO 10 TONS

Write for catalog 38AC and 38BC with discount to truck dealers.  
CARL H. FRINK, Mfr., CLAYTON, 1000 Is., N. Y.  
DAVENPORT-BESLER CORP., DAVENPORT, IOWA  
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

Specify

## VELVETOUCH

BIMETALLIC FRICTION MATERIAL

for

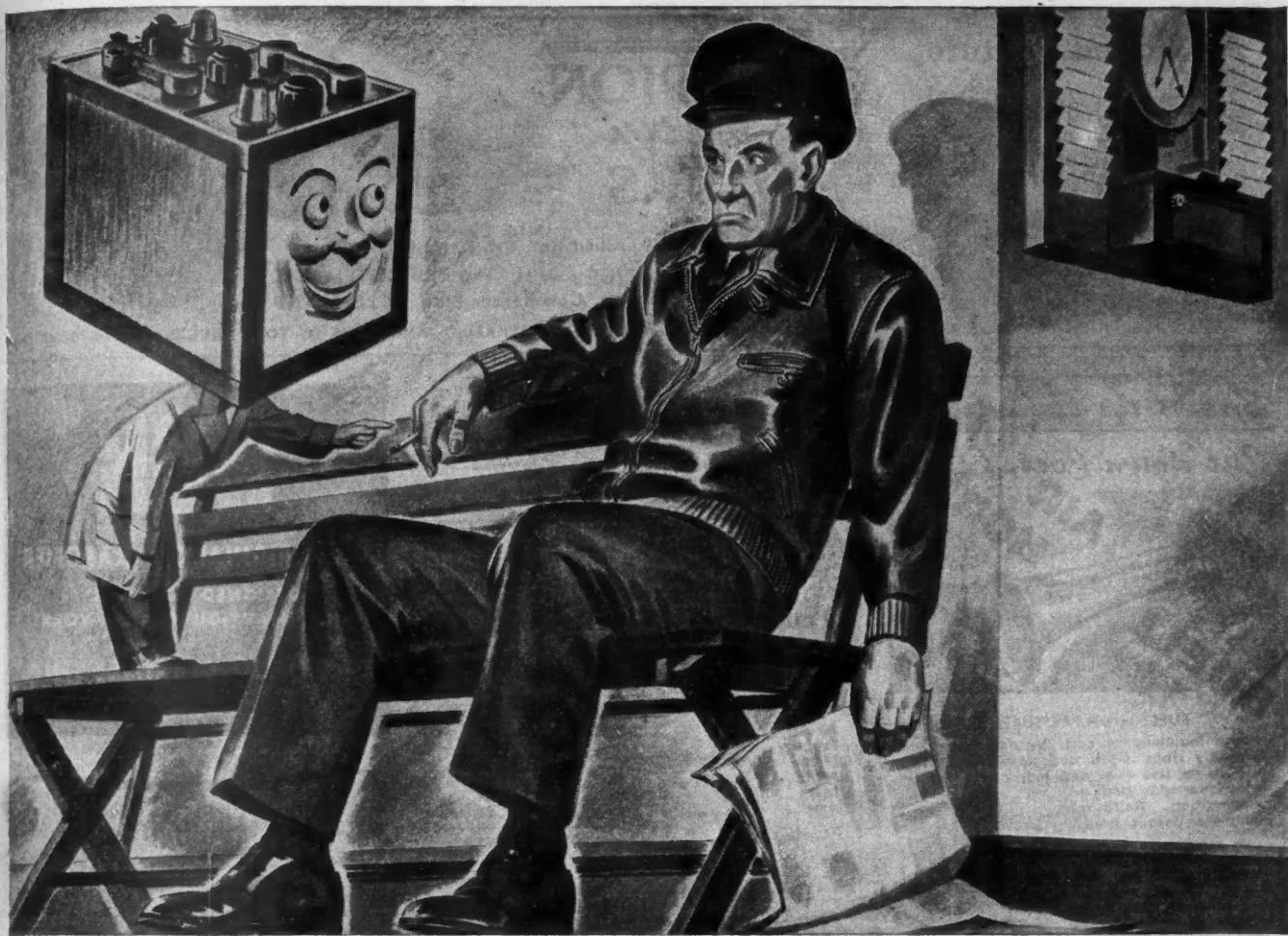
### CLUTCHES AND BRAKES

THE S. K. WELLMAN CO.  
CLEVELAND, OHIO

## KINNEAR ROLLING DOORS

For truck bodies as well as buildings. Rugged, dependable. Steel slat curtain coils up quickly, out of the way. Built any size. Motor operation, if desired. Write for details.

The Kinnear Mfg. Co.  
2100-20 Fields Ave.  
Columbus 16, Ohio



## Mr. Hi-Q Helps Cure an Early Morning Headache

**Mr. Hi-Q:** You're a bit late getting out this morning . . . or are you planning to take the day off?

**Driver:** I'm plenty late. And I'm plenty *burned up*. Here I get down on time . . . and my battery's dead. Worse yet, they had to send out for a replacement. Boy, will the *boss* rave when he hears about *that*!

**Mr. Hi-Q:** Surely, you folks have replacement batteries?

**Driver:** Sure, but not enough to keep us going.

**Mr. Hi-Q:** I wonder if your boss has thought about standardizing on *his manufacturer's top-quality batteries*. They stand up better, last longer, and should ease the load on your service department.

**Driver:** What's the difference? How are they better?

**Mr. Hi-Q:** They have stronger plates, better separators, heavier cases, for instance. And most manufacturers equip their *best* batteries with *Fiberglas\* Retainer Mats*.

**Driver:** I've heard about those mats. What do they do?

**Mr. Hi-Q:** Standard tests show that they greatly reduce battery failures formerly traceable to shedding of the power-producing material from the positive plates.

**Driver:** That sounds good.

**Mr. Hi-Q:** Yes, and these same tests show that batteries equipped with Fiberglas Mats last up to *twice as long* as the same batteries without the mats.

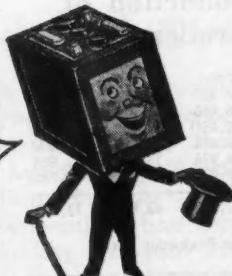
**Driver:** Boy, that would sure cure a lot of *headaches* around here. I wish you'd talk to the boss when he comes in.

**Mr. Hi-Q:** I intend to, and I'll also tell him that he can get these better batteries from his regular battery distributor. Fiberglas-equipped of course!

Owens-Corning Fiberglas Corporation,  
1960 Nicholas Building, Toledo 1,  
Ohio. In Canada, Fiberglas Canada  
Ltd., Oshawa, Ontario.



YOU CAN'T FIND A BETTER  
BUY THAN THE BEST  
BATTERIES—  
FIBERGLAS-EQUIPPED



# FIBERGLAS

\*T. M. Reg. U. S. Pat. Off.

## BATTERY RETAINER MATS

## An Added Feature

In this optional deck plate operators can obtain the many advantages of Champion Tanks plus a platform on which to carry brake lines or stand while adjusting tar-paulin.

Two independent tanks. Not two tanks made as one.

A badly damaged tank can be quickly replaced or truck operated on other tank while repairs are being made.

## CHAMPION Safety TANKS

Mfd. by  
Allied Eqt. Co., Detroit

Distributed Nationally by The TRUCKSTELL CO.  
1672 Union Commerce Bldg., CLEVELAND

WRITE FOR LITERATURE AND NAME OF YOUR TRUCKSTELL DISTRIBUTOR

## Speed-up Schedules

Cut-down Costs!



**BUELL HIGH PRESSURE AIR HORNS**  
reduce maintenance costs by decreasing unnecessary stops, starts and slow downs. This also means less wear and tear on equipment with lower gas and oil consumption. Write for complete details now.

### AIR COMPRESSORS

Powerful, reliable and economical in use, here is a precision built compressor that will give long service without frequent parts replacement. We specialize in the manufacture of small, high speed compressors of the highest quality. Write for literature.



**BUELL MANUFACTURING CO.**  
2988 Cottage Grove Ave., Chicago 16

## BONNEY TOOLS

**Bonney Forge & Tool Works**  
Allentown, Pa.

**Timken Bearings** are the first choice of engineers and fleet operators everywhere because of their unusual efficiency and outstanding performance. Be sure the trade-mark "TIMKEN" is on every bearing you buy!

**THE TIMKEN ROLLER BEARING COMPANY**  
CANTON 6, OHIO



## CCJ NEWSCAST

(CONTINUED FROM PAGE 162)

## Monthly Production of Trucks and Truck-Tractors\*

### LIGHT Under 9000 lbs. GVW

1945	Civilian	Military	Total
January.....	21,621	21,621	
February.....	199	20,641	20,800
March.....	1,784	21,925	23,709
April.....	4,746	18,352	23,098
May.....	5,688	18,633	24,321
June.....	5,281	16,306	21,587
Total—6 Mos....	17,658	117,478	135,136

### MEDIUM 9,000 to 16,000 lbs. GVW.

1945	Civilian	Military	Total
January.....	3,527	14,710	
February.....	10,534	3,378	13,912
March.....	12,829	3,994	16,823
April.....	10,275	3,645	13,920
May.....	12,003	3,526	15,529
June.....	11,831	2,093	13,924
Total—6 Mos....	68,655	20,163	88,818

### HEAVY 16,000 lbs. and Over, GVW.

1945	Civilian	Military	Total
January.....	3,836	26,898	30,734
February.....	3,339	26,162	29,501
March.....	3,726	30,474	34,200
April.....	3,959	28,302	30,261
May.....	4,624	26,484	31,108
June.....	5,521	24,815	30,336
Total—6 Mos....	25,005	161,135	186,140

### TOTAL—ALL WEIGHTS

1945	Civilian	Military	Total
January.....	15,019	52,046	67,065
February.....	14,032	50,181	64,213
March.....	18,339	56,393	74,732
April.....	18,980	48,298	67,279
May.....	22,315	48,643	70,958
June.....	22,633	43,214	65,847
Total—6 Mos....	111,318	296,776	410,094

\* Source—Automotive Division—War Production Board.

## Monthly Production of Truck Trailers\*

1945	Total	Military	Civilian
January.....	15,429	12,568	2,861
February.....	15,565	13,314	2,251
March.....	16,481	14,330	2,161
April.....	15,626	13,629	1,987
May.....	16,938	15,084	1,854
June.....	17,777	15,042	2,735
Total—6 Mos....	97,816	83,967	13,849

\* Automotive Division—War Production Board.

## WGB

THE ORIGINAL OIL CLARIFIER

DESIGNED ESPECIALLY  
FOR HEAVY-DUTY FLEET WORK

W.G.B. OIL CLARIFIER, INC.  
KINGSTON, N.Y.

## SERVICE-PROVED

YARDS of toughest ser-  
vice prove Blackhawk  
Hydraulics superior in  
safety, rugged dependability  
and utility. "Service-  
Proved" Seal found only  
on Blackhawks. Only com-  
plete line of hydraulic  
hand jacks—models up to  
50 tons capacity.

BLACKHAWK MFG. CO.  
Dept. 1118, Milwaukee, Wis.



## BLACKHAWK

KEEP YOUR  
VEHICLES MOVING  
ECONOMICALLY

with  
**HALL** VALVE SERVICING EQUIPMENT

Ask Your Jobber or write  
**THE HALL MFG. CO.**  
TOLEDO, OHIO



TELLS YOU  
WHEN IT'S  
UNLOCKED!

**ASF Safety 5th WHEEL**  
AMERICAN STEEL FOUNDRIES  
400 NORTH MICHIGAN AVE. CHICAGO(11)